FIG. 1

```
                                                     LIM 1
P                     WEGRPQELGGKEIPLCAGCDQHILDRFILKALDRHWHSKCLKCSDCHTPLAER
M  MLLEAELDCHRERPGAPGASALCTFSRTP---M--------------------------------V-----
C  MLLE******RVRAGSEKAAELCPFPRSP--------N---V------V---------------Q-Q---K
X  MLLE******RVRTGTQKSSDMCGYT-SP---Q----N---V------V------------N--QTQ---K
Z  MLLE******HPGSSCQNAGNYTRYSSSQD--V----N---V------V---------------QSQ--DK

                                     LIM2
P  CFSRGESLYCKDDFFKRFGTKCAACQLGIPPTQVVRRAQDFVYHLHCFACVVCKRQLATGDEFYLMEDSRL
M  --------V--------------------------------------------------------------
C  -----DGV---E--------------Q-----------------------I--------------------
X  -----D-V------------------Q------------E----------I--------------------
Z  -----D-V------------------Q-----------------------I--------------------

                                     HOMEODOMAIN
P  VCKADYETAKQREAEATAKRPRTTITAKQLETLKSAYNTSPKPARHVREQLSSETGLDMRVVQVWFQNRRA
M  -----------------------------------------------------------------------
C  ---------------S------------------N---N--------------------------------
X  ---------------S------------------N---N--------------------------------
Z  ---------------S------------------N---N-------------T------------------

P  KEKRLKKDAGRQRWGQYFRNMKRARGGSKSDKDSVQEEGQDSDAEVSFTDEPSMAEMGPANGLYGGLGEPA
M  -----------------------S--S-------I--*-----------------D--------SS-----
C  -----------------------S--T-------I----P--------------S--SHS--I-SN-S-AS
X  -----------------------S--N-------I----P--------------S--NHS--I-NS-NDSS
Z  -----------------------S--T-------T--D-M--------------SDL-HS--I-SS-S-SS

P  PALGRPSGAPGSFPLEHGG*LAGPEQYGELRPSSPYGVPSSPAALQSLPGPQPLLSSLVYPEAGLGLV*PA
M  ------V-GL---T-D---*-T-----R----G----I-P----P----------------DTN-S--*-S
C  -----QA-TN---S-D-S-*IP-QD--HD--SN----I-Q---S--A---H----------DS---IM*GQ
X  -V---QA-SN-P-S-----*IPTQD--HN--SN----I-Q---S---M--H-S---N-AF-DT---IIGQ*
Z  -----QG-NHPA------AIIPSQ-P-HDIQA----SL-Q--GP--P--RH-----------S--PMAGQS

P  GPPGGPPPMRVL*AGNGPSSDLSTGSSGGYPDFPASPASWLDEVDHAQF
M  ------------*-----------E--S---------------------
C  -GQ-V-QS----*------------------------------------
X  GGQ-VA-T---I*GV----------------------V--------T--
Z  -GQDMT-GV--MMA-----------------------------------
```

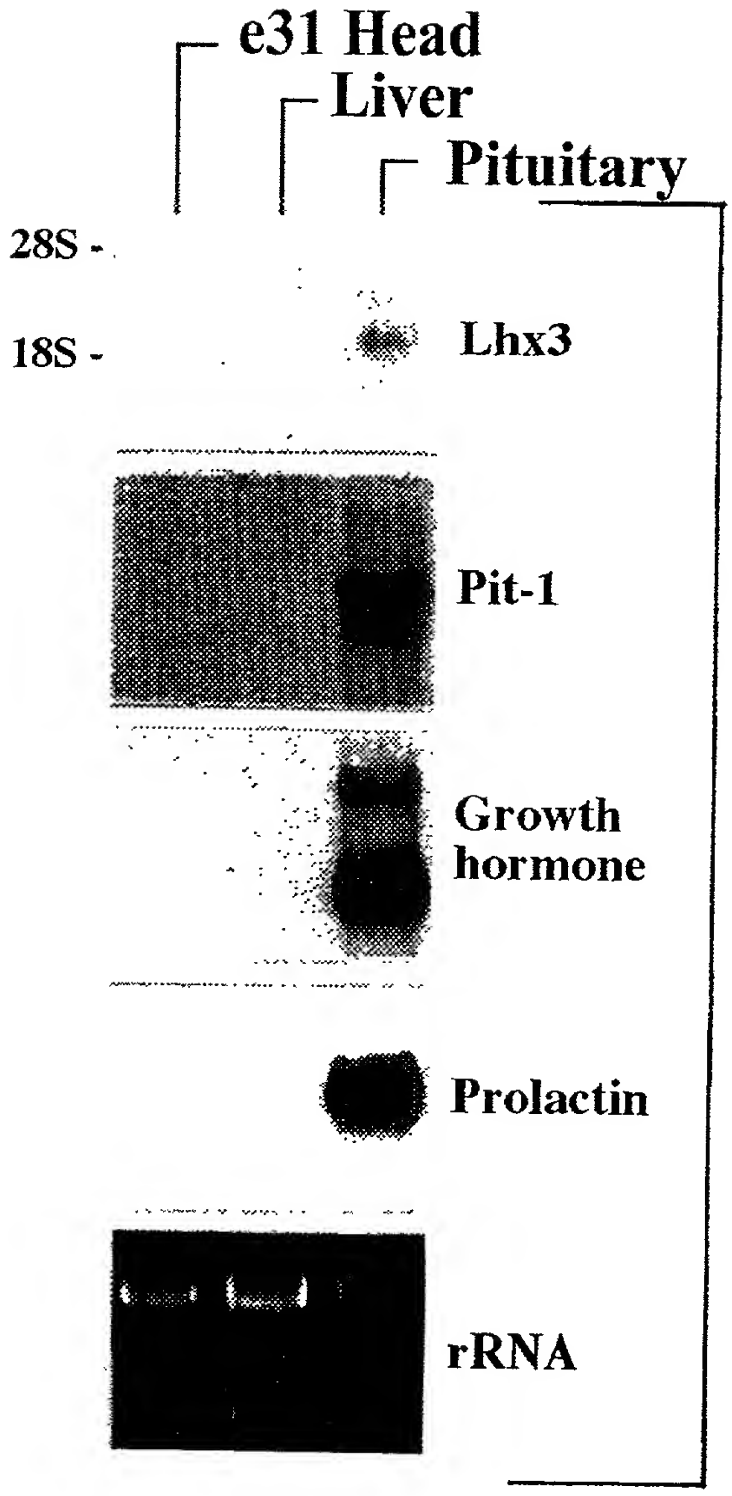
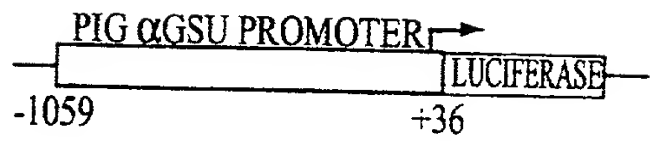

e31 Head
Liver
Pituitary
28S -
18S -
Lhx3
Pit-1
Growth hormone
Prolactin
rRNA

FIG. 2

FIG. 3Ai



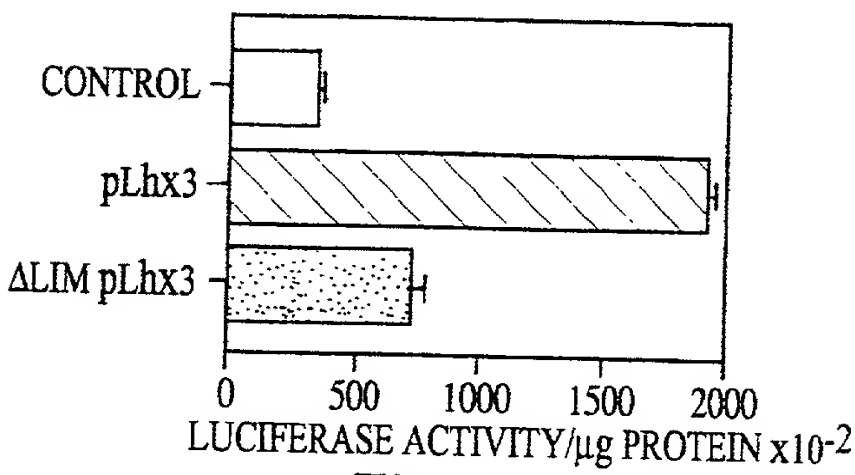
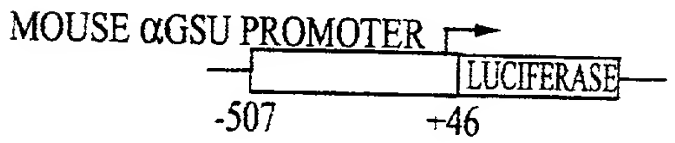


FIG. 3Aii

FIG. 3Bi



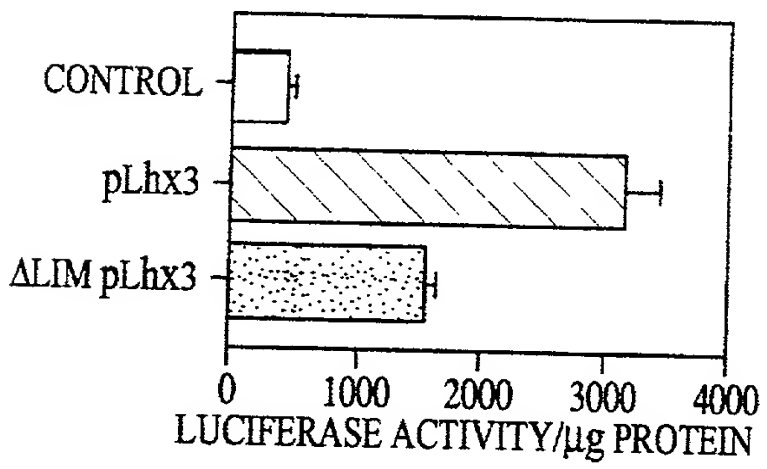


FIG. 3Bii

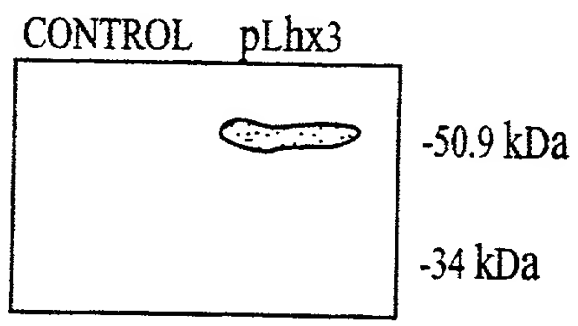
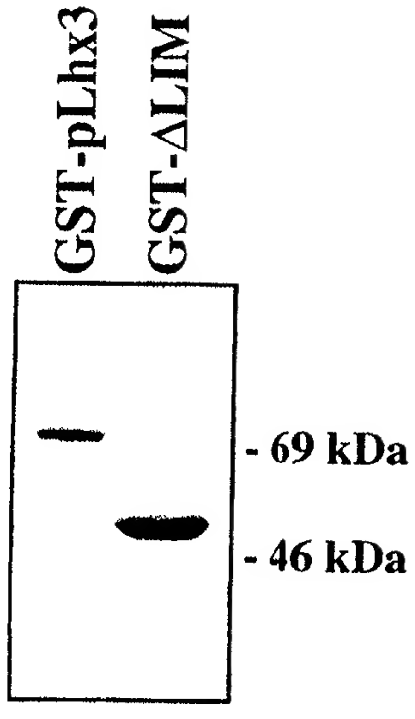


FIG. 3C

FIG. 4B

wild-type probe	+	+	+	+	+	+			+	
mutant probe							+	+		+
wild-type competitor				+						
mutant competitor					+					
GST		+								
GST-ΔLIM pLhx3			+	+	+		+			
ΔLIM pLhx3						+		+		
GST-pLhx3									+	+

FIG. 4A



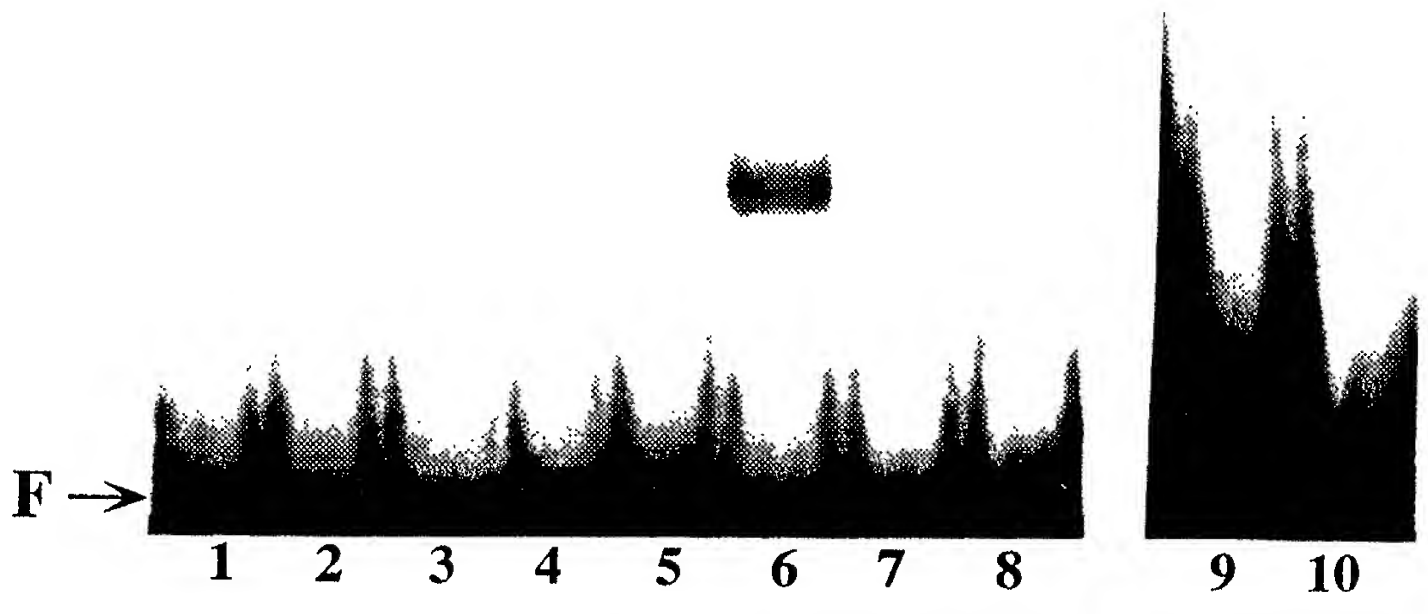


FIG. 5A

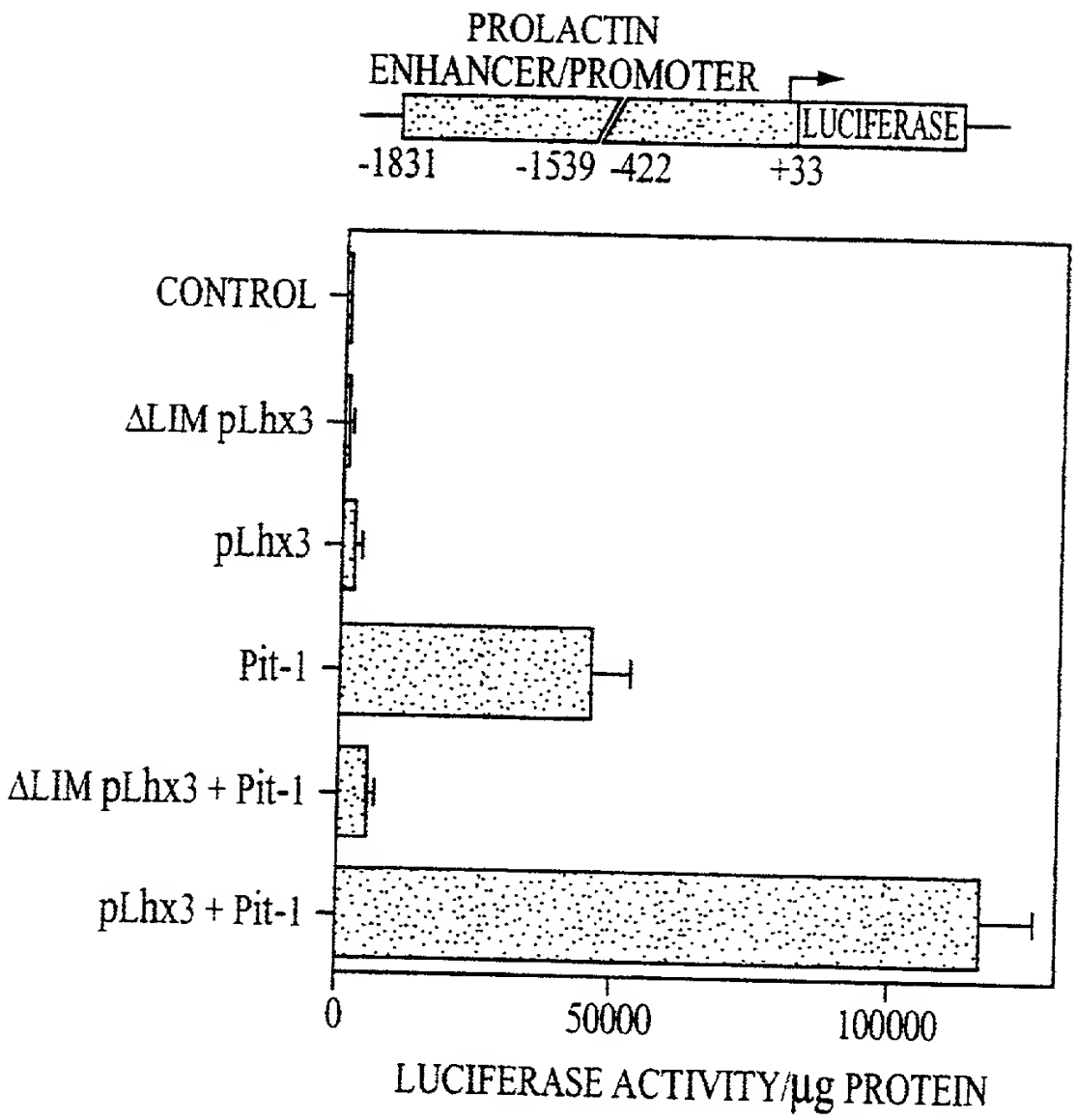

PROLACTIN
ENHANCER/PROMOTER
LUCIFERASE
-1831
-1539
-422
+33
CONTROL
ΔLIM pLhx3
pLhx3
Pit-1
ΔLIM pLhx3 + Pit-1
pLhx3 + Pit-1
0
50000
100000
LUCIFERASE ACTIVITY/μg PROTEIN

FIG. 5B

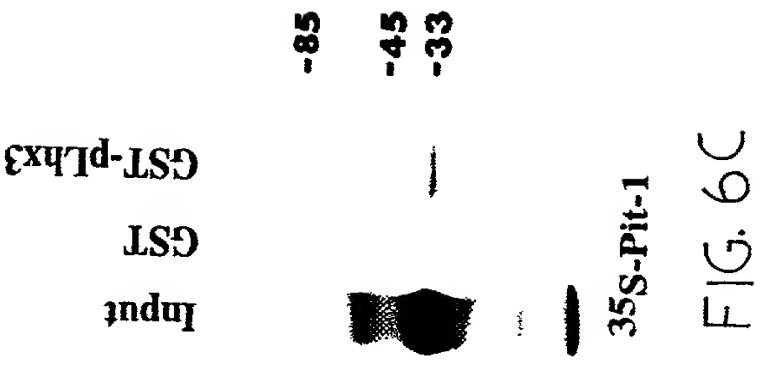


FIG. 6C

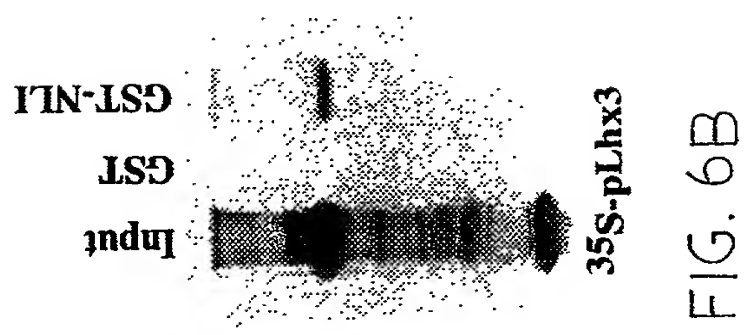


FIG. 6B

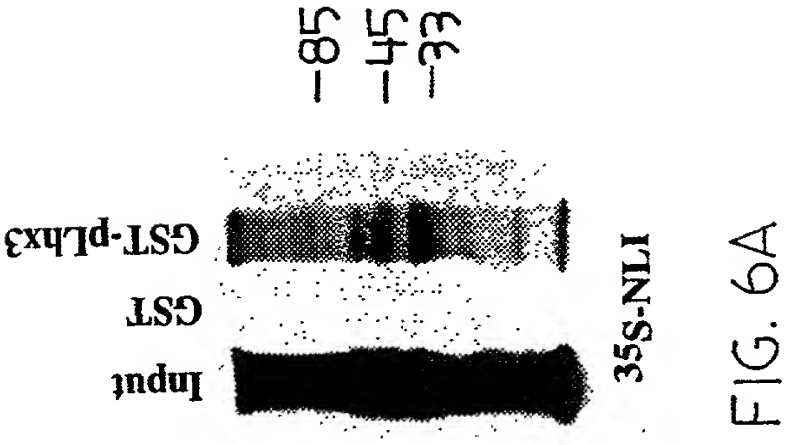


FIG. 6A

FIG. 7A

```
   1 ctgggagggg cggccacagg agctgggagg aaaagagatc ccactgtgtg ccggctgcga
  61 ccagcacatc ctggaccgct tcatcctcaa ggctctggac cgccactggc acagcaagtg
 121 cctcaagtgc agtgactgcc acacgccgct ggccgagcgc tgcttcagcc gcggagagag
 181 cctctactgc aaggacgact tcttcaagcg cttcgggacc aagtgcgccg cgtgccagct
 241 gggcatcccg cccacgcagg tggtgcgccg cgcccaggac ttcgtgtacc acctgcactg
 301 cttcgcctgc gtcgtgtgca agcggcagct ggccacgggc gacgagttct acctcatgga
 361 ggacagccgg ctcgtgtgca aggccgacta cgagaccgcc aagcagcgag aggccgaggc
 421 cacggccaag cggccgcgca cgaccatcac ggccaagcag ctggagacgc tgaagagcgc
 481 ctacaacacg tcgcccaagc ccgcgcgcca cgtgcgcgag cagctctcct ccgagaccgg
 541 cctggacatg cgcgtcgtgc aggtgtggtt ccagaaccgc cgggccaagg aaaagcggct
 601 caagaaggac gccggccggc agcgctgggg ccagtacttt cgtaacatga agcgcgcccg
 661 cggtggctcc aagtcggaca aggacagcgt ccaggaggag gggcaggaca gtgacgccga
 721 ggtctccttc acagacgagc catccatggc cgaaatgggc cctgccaacg gcctctacgg
 781 cggcctgggg gagcctgccc ctgccttggg ccggccctcg ggggccccgg gcagcttccc
 841 gctggagcac ggaggcctgg cgggcccgga gcagtatgga gagctgcgcc ccagcagccc
 901 ctacggtgtc ccctcgtcgc ccgccgccct gcagagcctc cctggccccc agcccctcct
 961 ctccagcttg gtgtacccgg aggctggctt ggggcttgtg cccgcggggc ccccaggtgg
1021 gccccccaccc atgagggtgc tggcagggaa cggacccagc tccgacctat ccacggggag
```

FIG. 7B

1081 cagtgggggc taccccgact tccctgccag tcccgcctcc tggctggacg aggtggatca
1141 cgctcagttc tgactgaggc cccagctccg tggagcacca gacacgagca ctgcccctgg
1201 ctgggtggtc gggagccgcg ctctcctttc ccgaagccct gggcctctaa aggacacagg
1261 gtcaccggcg gggcacaggc tgaggactgt ccagcccggc ggccctggcc ccgggcagag
1321 ggactttctc ccggtctcga ggctccttct gggacaaggg gagccacctg gtggctgctc
1381 agcaagcctt gttttgtaag cagattcctc cctttatcaa ccaaaattaa ctgagtgctt
1441 gctgctcttt ctagaccgga gtggtcagcc cccgaagccg gggaggggggg ctctccccag
1501 cccagagcag cacagccctc agactggaag atgctttaat ttttaaaatt aaaaaataat
1561 acgaactgtg cttccatttc ccagcttcct ctgtctagtt ctgcc

FIG. 8

WEGRPQELGGKEIPLCAGCDQHILDRFILKALDRHWHSKCLKCSDCHTPLAERCFS
RGESLYCKDDFFKRFGTKCAACQLGIPPTQVVRRAQDFVYHLHCFACVVCKRQLAT
GDEFYLMEDSRLVCKADYETAKQREAEATAKRPRTTITAKQLETLKSAYNTSPKPA
RHVREQLSSETGLDMRVVQVWFQNRRAKEKRLKKDAGRQRWGQYFRNMKRARGGSK
SDKDSVQEEGQDSDAEVSFTDEPSMAEMGPANGLYGGLGEPAPALGRPSGAPGSFP
LEHGGLAGPEQYGELRPSSPYGVPSSPAALQSLPGPQPLLSSLVYPEAGLGLVPAG
PPGGPPPMRVLAGNGPSSDLSTGSSGGYPDFPASPASWLDEVDHAQF

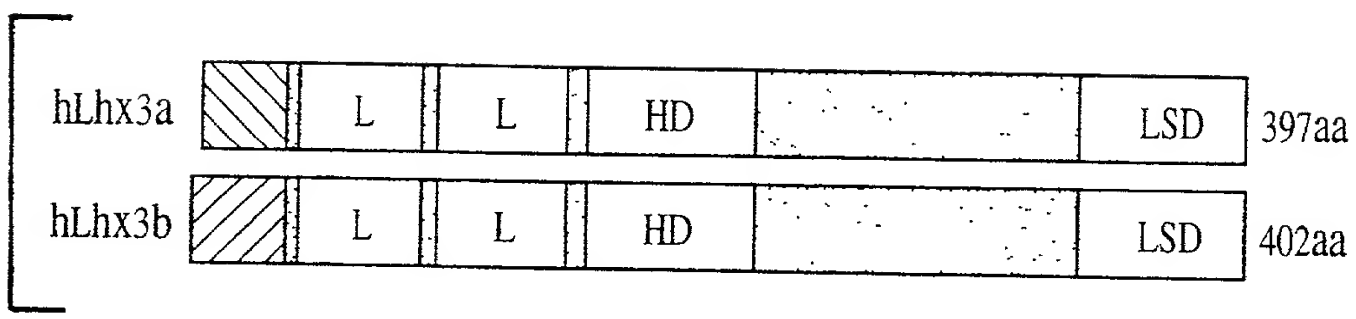


Fig. 9A

FIG. 9B

```
Ha   1 MLLETGLERDRARPGA--A-AVCTLGGTR 26
Ma   1 ....AE.DCH.E....PG.S.L..FSR.P 29

Hb   1 MEARGELGPARESAGGDLLLALLARRADLRR 31
Mb   1 .......D.S..................... 31

                          LIM Domain 1
H   32 EIPLCAGCDQHILDRFILKALDRHWHSKCLKCSDCHTPLAERCFSRGESVYCKDDFFKRFGTK
P   12 ....................................................................
M   32 ...M.....................................V.....................L.....
                          LIM Domain 2
H   94 CAACQLGIPPTQVVRRAQDFVYHLHCFACVVCKRQLATGDEFYLMEDSRLVCKADYETAKQREAEA
P   74 ....................................................................
M   94 ....................................................................

                          Homeodomain
H  160 TAKRPRTTITAKQLETLKSAYNTSPKPARHVREQLSSETGLDMRVVQVWFQNRRAKEKRLKKDAG
P  140 ....................................................................
M  160 ....................................................................

H  225 RQRWGQYFRNMKRSRGGSKSDKDSVQ-EGQDSDAEVSFPDEPSLAEMGPANGLYGSLGEPTQALGR
P  205 .............A...........E..........T....M..........G....AP....
M  225 ..............S......I.-..........T....M.D........S.....AP....

H  290 PSGALGNFSLEHGGLAGPEQYRELRPGSPYGVPPSPAAPQSLPGPQPLLSSLVYPDTSLGLVPSGA
P  271 ....P.S.P...........G....S.....S....L..............EAG.....A.P
M  290 .V.G..S.T.D...T.............I.....................N.S.....P

                          Lhx3/LIM3-specific domain
H  356 PGGPPPMRVLAGNGPSSDLSTGSSGGYPDFPASPASWLDEVDHAQF* 402
P  337 ....................................................* 383
M  356 ..........E..S.....................................* 402
```

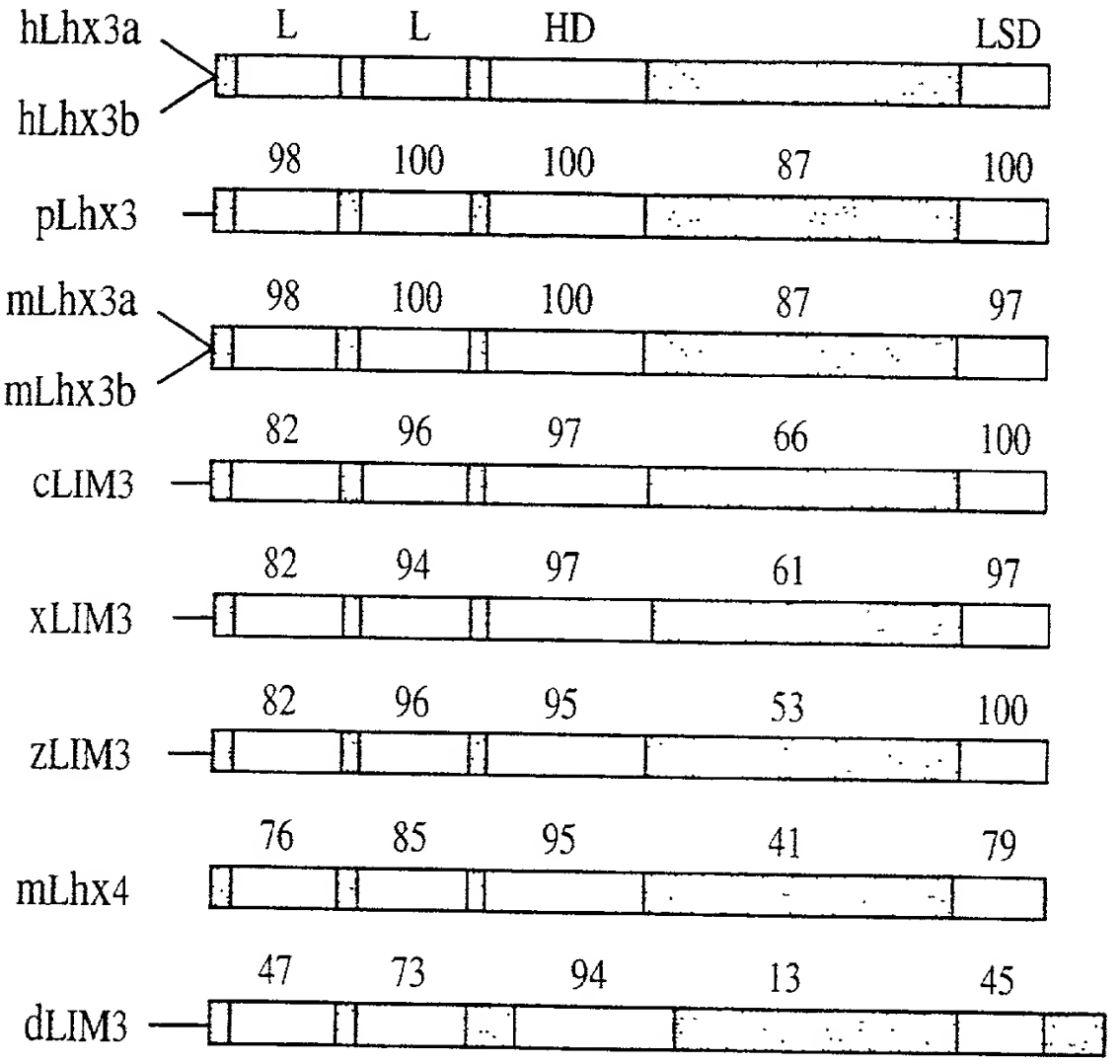

hLhx3a
hLhx3b
L
L
HD
LSD
pLhx3
98
100
100
87
100
mLhx3a
mLhx3b
98
100
100
87
97
cLIM3
82
96
97
66
100
xLIM3
82
94
97
61
97
zLIM3
82
96
95
53
100
mLhx4
76
85
95
41
79
dLIM3
47
73
94
13
45

Fig. 9C

FIG. 10A

-104 ggcacgagcc ccgcacgacg cggcgggact tgggagcccc gaaccctcca
-54 ggggacgctg acctcggagg agcgcgtctc gcgccactcg gcctggtggc
-4 cgcgATGCTG CTGGAAACGG GGCTCGAGCG CGACCGAGCG AGGCCCGGGG
47 CCGCCGCCGT CTGCACCTTG GGCGGGACTC GG
79 GAGATCCCGC TGTGCGCTGG CTGTGACCAG CACATCCTGG ACCGCTTCAT
129 CCTCAAGGCT CTGGACCGCC ACTGGCACAG CAAGTGTCTC AAGTGCAGCG
179 ACTGCCACAC GCCACTGGCC GAGCGCTGCT TCAGCCGAGG GGAGAGCGTT
229 TACTGCAAGG ACGACTTTTT CAAGCGCTTC GGGACCAAGT GCGCCGCGTG
279 CCAGCTGGGC ATCCCGCCCA CGCAGGTGGT GCGCCGCGCC CAGGACTTCG
329 TGTACCACCT GCACTGCTTT GCCTGCGTCG TGTGCAAGCG GCAGCTGGCC
379 ACGGGCGACG AGTTCTACCT CATGGAGGAC AGCCGGCTCG TGTGCAAGGC
429 GGACTACGAA ACCGCCAAGC AGCGAGAGGC CGAGGCCACG GCCAAGCGGC
479 CGCGCACGAC CATCACCGCC AAGCAGCTGG AGACGCTGAA GAGCGCTTAC
529 AACACCTCGC CCAAGCCGGC GCGCCACGTG CGCGAGCAGC TCTCGTCCGA
579 GACGGGCCTG GACATGCGCG TGGTGCAGGT TTGGTTCCAG AACCGCCGGG
629 CCAAGGAGAA GAGGCTGAAG AAGGACGCCG GCCGGCAGCG CTGGGGGCAG
679 TATTTCCGCA ACATGAAGCG CTCCCGCGGC GGCTCCAAGT CGGACAAGGA
729 CAGCGTTCAG GAGGGGCAGG ACAGCGACGC TGAGGTCTCC TTCCCCGATG

FIG. 10B

```
 779 AGCCTTCCTT GGCGGAAATG GGCCCGGCCA ATGGCCTCTA CGGGAGCTTG
 829 GGGGAACCCA CCCAGGCCTT GGGCCGGCCC TCGGGAGCCC TGGGCAACTT
 879 CTCCCTGGAG CATGGAGGCC TGGCAGGCCC AGAGCAGTAC CGAGAGCTGC
 929 GTCCCGGCAG CCCCTACGGT GTCCCCCCAT CCCCCGCCGC CCCGCAGAGC
 979 CTCCCTGGCC CCCAGCCCCT CCTCTCCAGC CTGGTGTACC CAGACACCAG
1029 CTTGGGCCTT GTGCCCTCGG GAGCCCCCGG CGGGCCCCCA CCCATGAGGG
1079 TGCTGGCAGG GAACGGACCC AGTTCTGACC TATCCACGGG GAGCAGCGGG
1129 GGTTACCCCG ACTTCCCTGC CAGCCCCGCC TCCTGGCTGG ATGAGGTAGA
1179 CCACGCTCAG TTCTGAccca ggcccggctc caccctgcac ctcacacgag
1229 ggagctgccc ctgggtgggc ggctcggggc tgctggggtt tccgaggaag
1279 tggggccagg gcgtcaaggg agggctggtg ccttcggagc ctcccactgc
1329 cgaccgcaca gctccctctc tgggggctga gggacccacc tggcccctcc
1379 tctgacacag ggctggcccg ccaggtggcc tcccagcaag ccagcctttt
1429 ttgtaagcaa atttctcccc tttattgacc aattaactga gcacttgctg
1479 ctatttctag acatgaaatg tcaccttgct gaggcccagc ccagcccagc
1529 atagcccgag ggctggaaaa acgctttcat ctctaaaact gagaaatcat
1579 cataattgtg ctttcacttc ccaggctcca tgtgtcttgg agccgtcacc
1629 ccgaggctcc ctctttaggt cggagattgg ccttgcctgt cgaggcaaga
```

FIG. 10C

1679 ggctgcagag gcggggacac acctgtgtcc tcctcacccc accccaggcc
1729 cttggtgtcc aggctgcacc cacagatgtc tgttgccaaa cagcctgccc
1779 tccctgccgg agccggctct gccagcccca gattgggaag tctccccgct
1829 ggagaagggt ggggctcctc tgagcctgcc ctgcctcctc catcagatcc
1879 tttgggaaga agtttctggg agatgcccgc agctgtgcgt gccccagaca
1929 caaaggctgg cctgtgtgta agtcaaagtc actcccgcaa acctgaatct
1979 cgagctacct attggttctg tgaatgttct gtgtctttta tttattctcg
2029 ggtgatcagc tctttccaag ctcgtgcc

FIG. 11A

-119 cgcagcgccc agcagcaccc ggagtcgctt ggacgccggt tcggggctat
-69 tgcggggtgg cgtcgctggg cccgggaaag ttcgggactg gagagtggcg
-19 acgccgggcg gcgggacccA TGGAGGCGCG CGGGGAGCTG GGCCCGGCCC
32 GGGAGTCGGC GGGAGGCGAC CTGCTGCTAG CACTGCTGGC GCGGAGGGCA
82 GACCTGCGCC GA
94 GAGATCCCGC TGTGCGCTGG CTGTGACCAG CACATCCTGG ACCGCTTCAT
144 CCTCAAGGCT CTGGACCGCC ACTGGCACAG CAAGTGTCTC AAGTGCAGCG
194 ACTGCCACAC GCCACTGGCC GAGCGCTGCT TCAGCCGAGG GGAGAGCGTT

FIG. 11B

```
 244 TACTGCAAGG ACGACTTTTT CAAGCGCTTC GGGACCAAGT GCGCCGCGTG
 294 CCAGCTGGGC ATCCCGCCCA CGCAGGTGGT GCGCCGCGCC CAGGACTTCG
 344 TGTACCACCT GCACTGCTTT GCCTGCGTCG TGTGCAAGCG GCAGCTGGCC
 394 ACGGGCGACG AGTTCTACCT CATGGAGGAC AGCCGGCTCG TGTGCAAGGC
 444 GGACTACGAA ACCGCCAAGC AGCGAGAGGC CGAGGCCACG GCCAAGCGGC
 494 CGCGCACGAC CATCACCGCC AAGCAGCTGG AGACGCTGAA GAGCGCTTAC
 544 AACACCTCGC CCAAGCCGGC GCGCCACGTG CGCGAGCAGC TCTCGTCCGA
 594 GACGGGCCTG GACATGCGCG TGGTGCAGGT TTGGTTCCAG AACCGCCGGG
 644 CCAAGGAGAA GAGGCTGAAG AAGGACGCCG GCCGGCAGCG CTGGGGGCAG
 694 TATTTCCGCA ACATGAAGCG CTCCCGCGGC GGCTCCAAGT CGGACAAGGA
 744 CAGCGTTCAG GAGGGGCAGG ACAGCGACGC TGAGGTCTCC TTCCCCGATG
 794 AGCCTTCCTT GGCGGAAATG GGCCCGGCCA ATGGCCTCTA CGGGAGCTTG
 844 GGGGAACCCA CCCAGGCCTT GGGCCGGCCC TCGGGAGCCC TGGGCAACTT
 894 CTCCCTGGAG CATGGAGGCC TGGCAGGCCC AGAGCAGTAC CGAGAGCTGC
 944 GTCCCGGCAG CCCCTACGGT GTCCCCCCAT CCCCCGCCGC CCCGCAGAGC
 994 CTCCCTGGCC CCCAGCCCCT CCTCTCCAGC CTGGTGTACC CAGACACCAG
1044 CTTGGGCCTT GTGCCCTCGG GAGCCCCCGG CGGGCCCCCA CCCATGAGGG
1094 TGCTGGCAGG GAACGGACCC AGTTCTGACC TATCCACGGG GAGCAGCGGG
```

FIG. 11C

1144 GGTTACCCCG ACTTCCCTGC CAGCCCCGCC TCCTGGCTGG ATGAGGTAGA
1194 CCACGCTCAG TTCTGAccca ggcccggctc caccctgcac ctcacacgag
1244 ggagctgccc ctgggtgggc ggctcggggc tgctggggtt tccgaggaag
1294 tggggccagg gcgtcaaggg agggctggtg ccttcggagc ctcccactgc
1344 cgaccgcaca gctccctctc tgggggctga gggacccacc tggcccctcc
1394 tctgacacag ggctggcccg ccaggtggcc tcccagcaag ccagcctttt
1444 ttgtaagcaa atttctcccc tttattgacc aattaactga gcacttgctg
1494 ctatttctag acatgaaatg tcaccttgct gaggcccagc ccagcccagc
1544 atagcccgag ggctggaaaa acgctttcat ctctaaaact gagaaatcat
1594 cataattgtg ctttcacttc ccaggctcca tgtgtcttgg agccgtcacc
1644 ccgaggctcc ctctttaggt cggagattgg ccttgcctgt cgaggcaaga
1694 ggctgcagag gcggggacac acctgtgtcc tcctcacccc accccaggcc
1744 cttggtgtcc aggctgcacc cacagatgtc tgttgccaaa cagcctgccc
1794 tccctgccgg agccggctct gccagcccca gattgggaag tctccccgct
1844 ggagaagggt ggggctcctc tgagcctgcc ctgcctcctc catcagatcc
1894 tttgggaaga agtttctggg agatgcccgc agctgtgcgt gccccagaca
1944 caaaggctgg cctgtgtgta agtcaaagtc actcccgcaa acctgaatct
1994 cgagctacct attggttctg tgaatgttct gtgtctttta tttattctcg
2044 ggtgatcagc tctttccaag ctcgtgcc

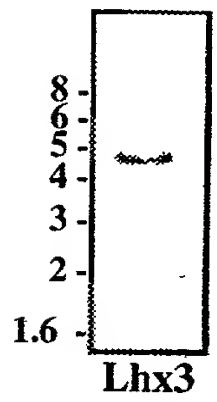


FIG. 12A

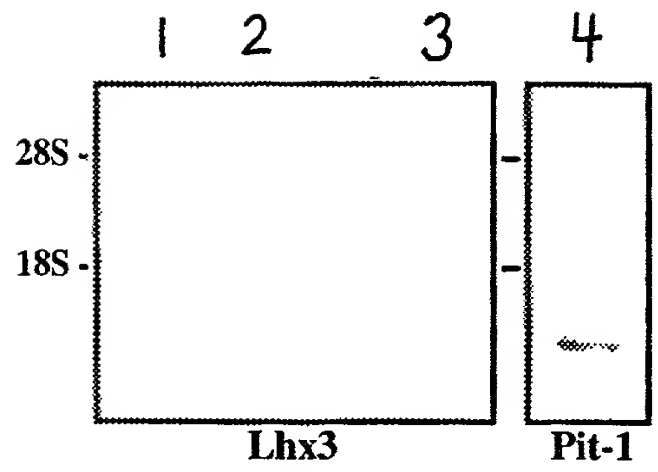


FIG. 12B

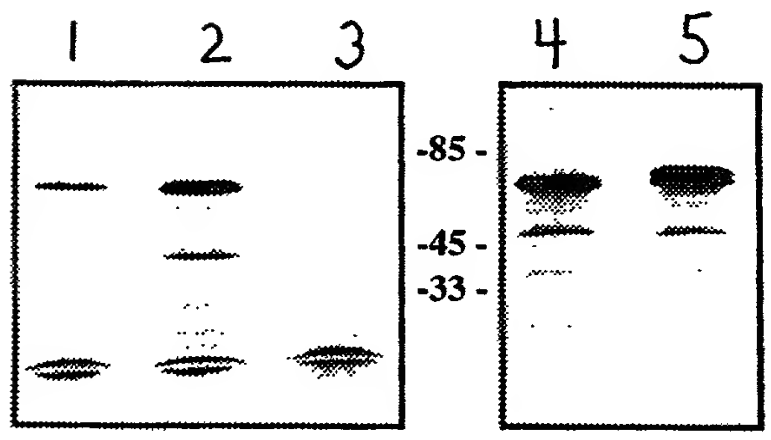


FIG. 12C

FIG. 13A

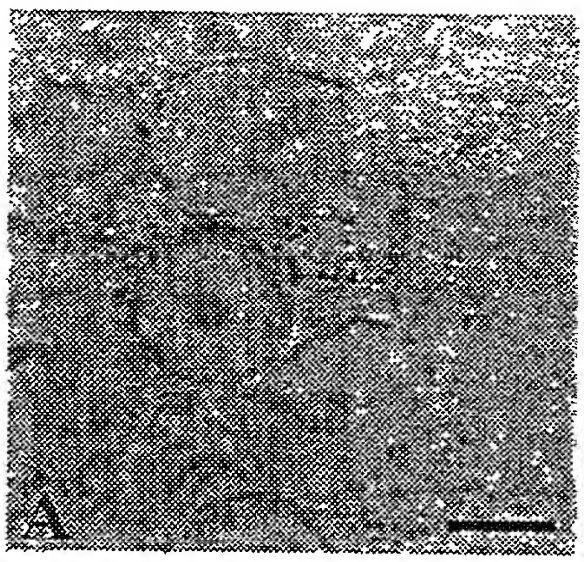


FIG. 13B

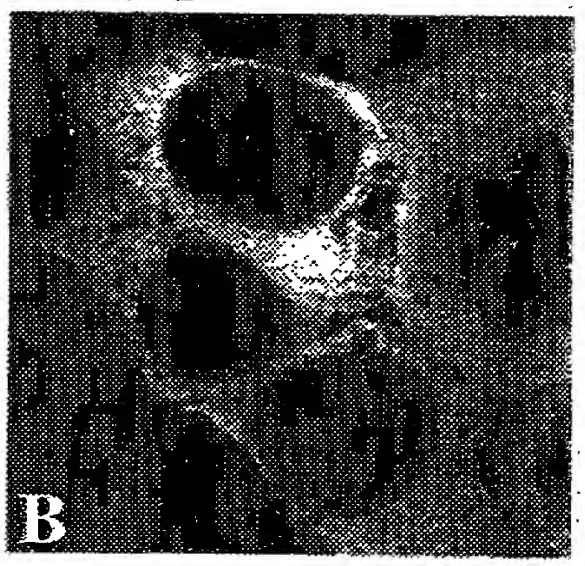


FIG. 13C

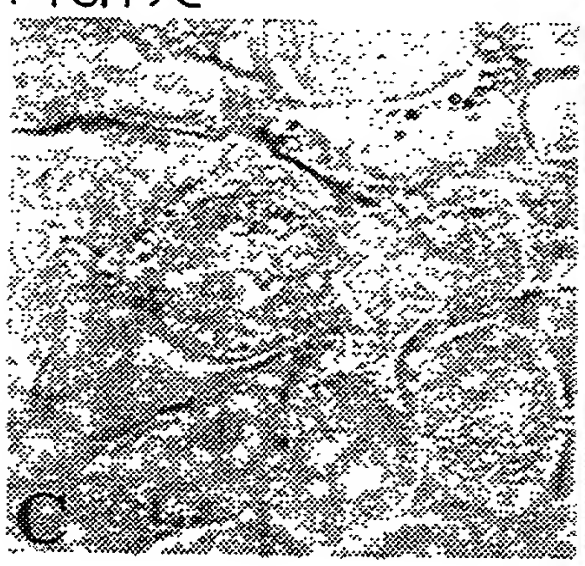


FIG. 13D

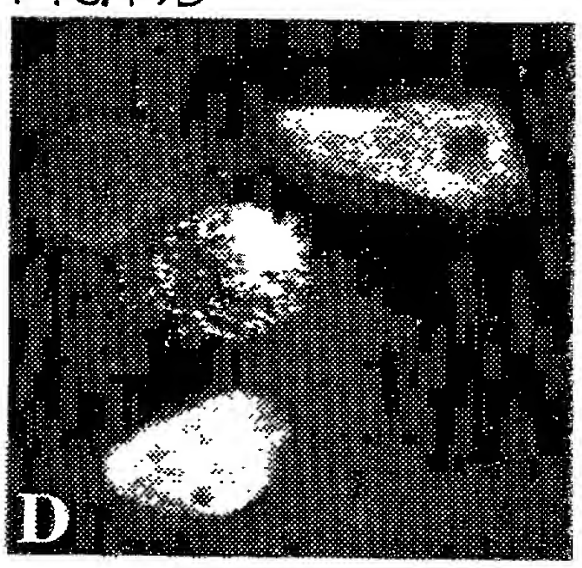


FIG. 13E

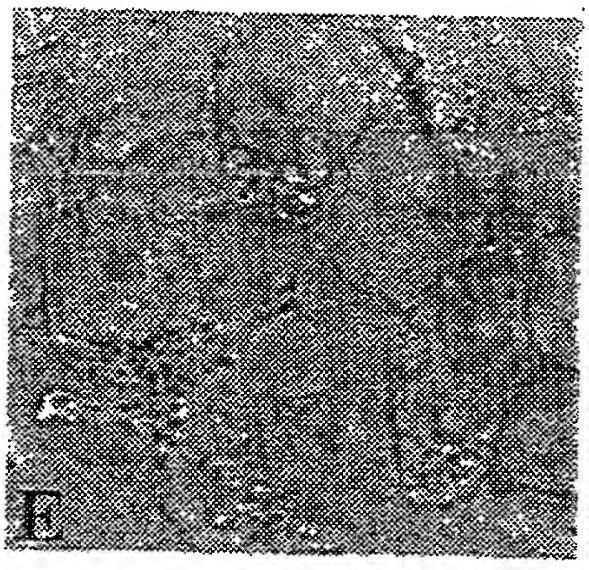


FIG. 13F

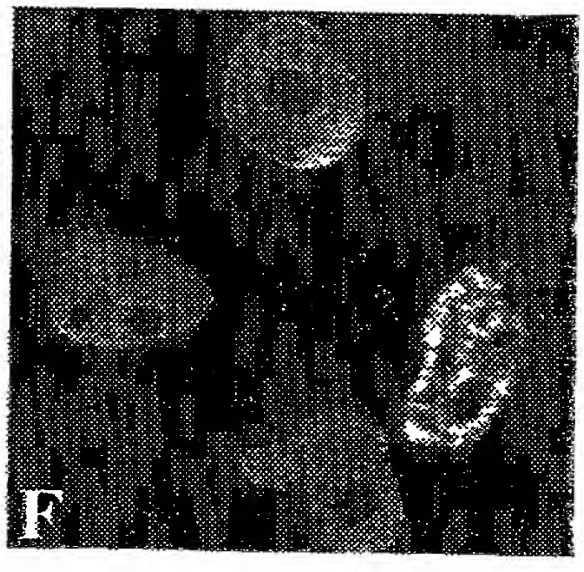


FIG. 14Ai

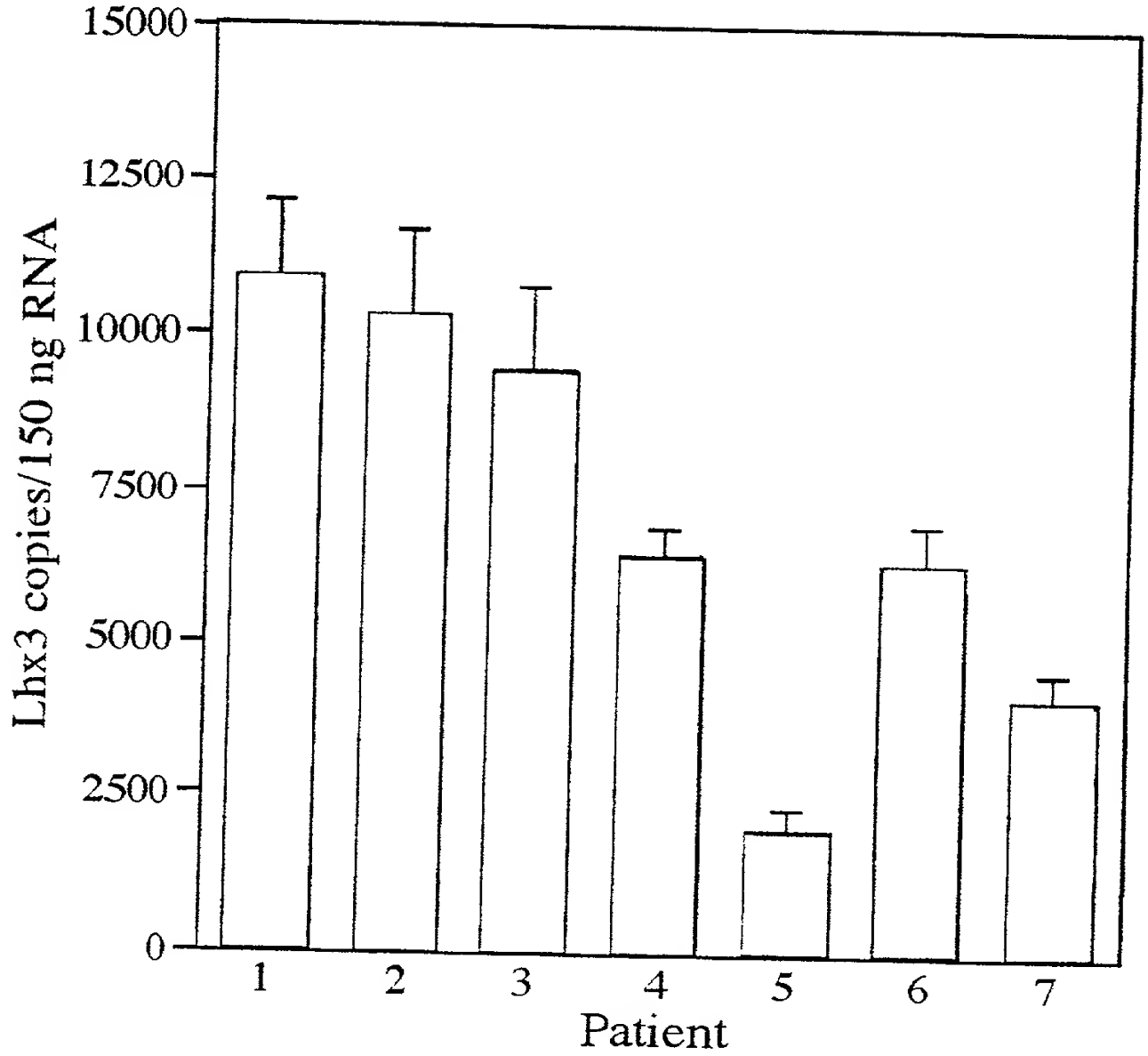


FIG. 14Aii

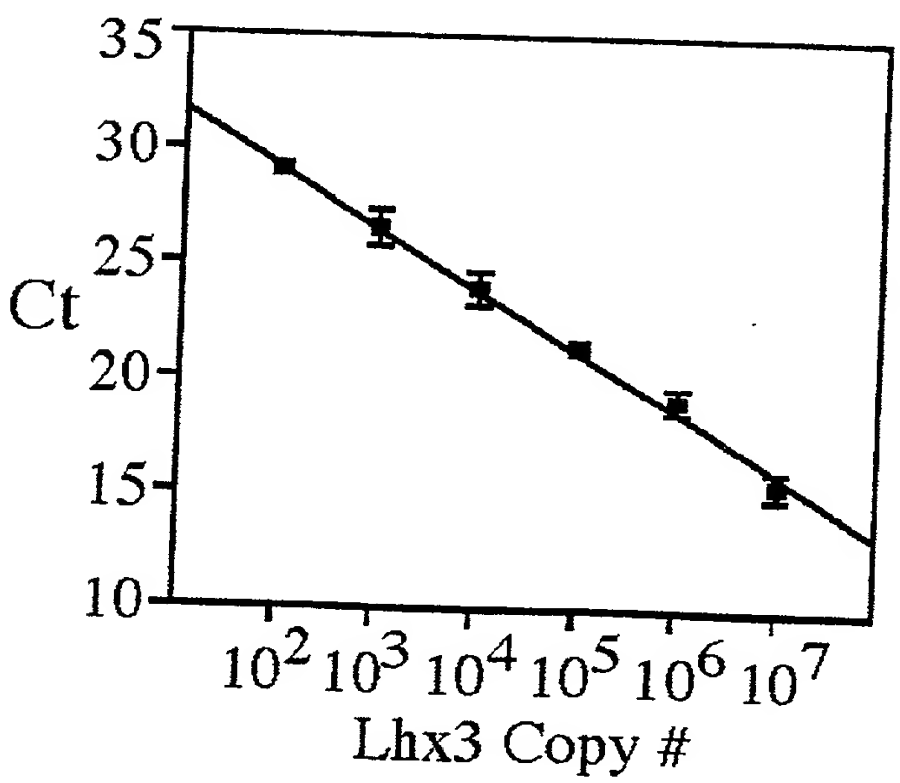


FIG. 14B

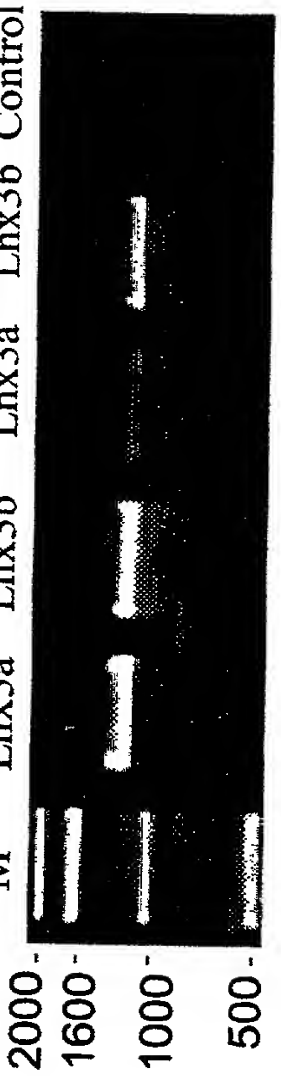


FIG. 14C

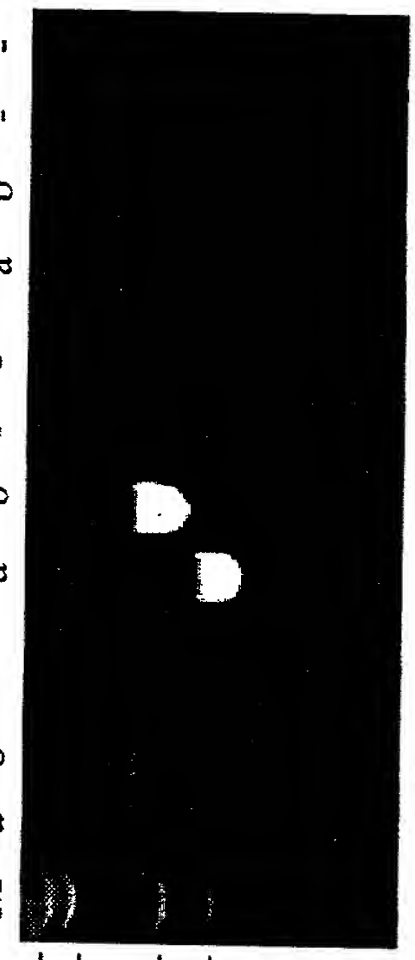


FIG. 15Ai

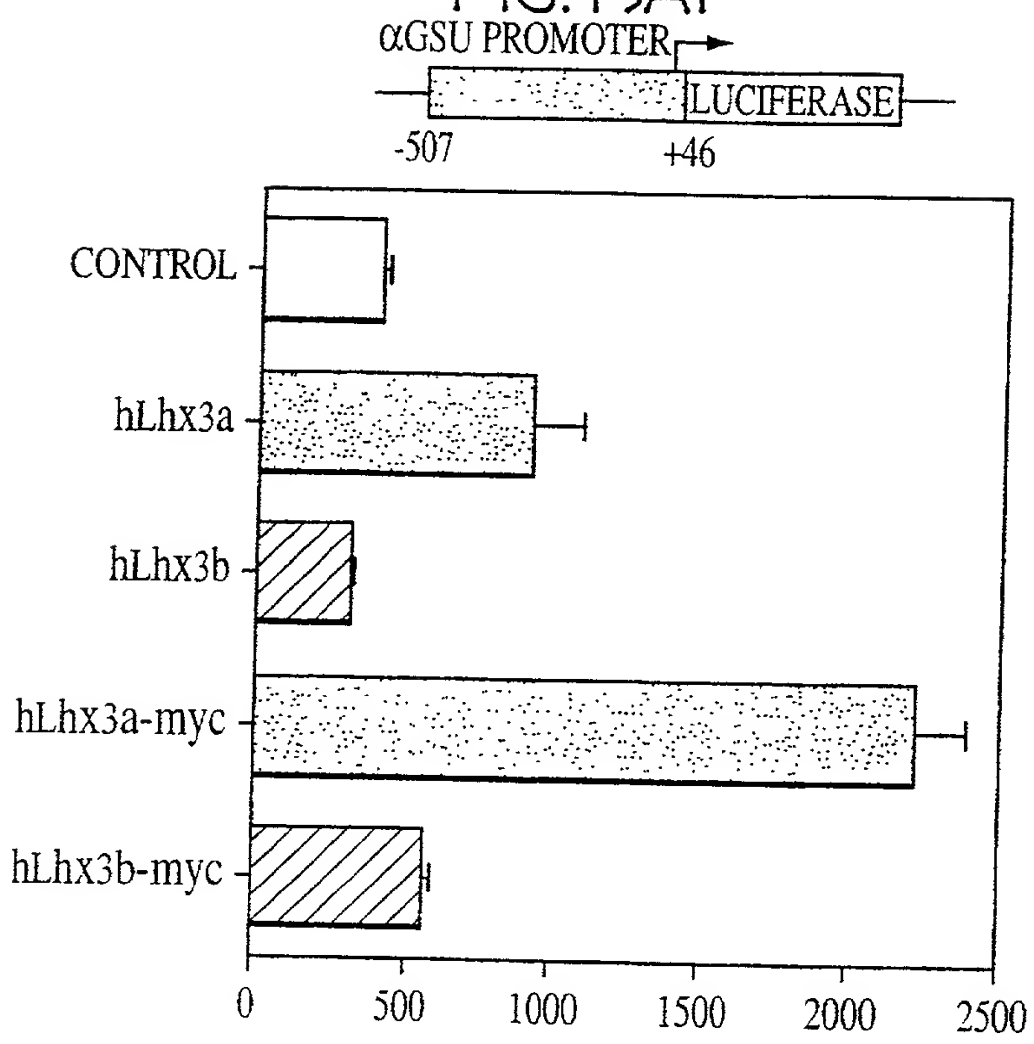


FIG. 15Aii

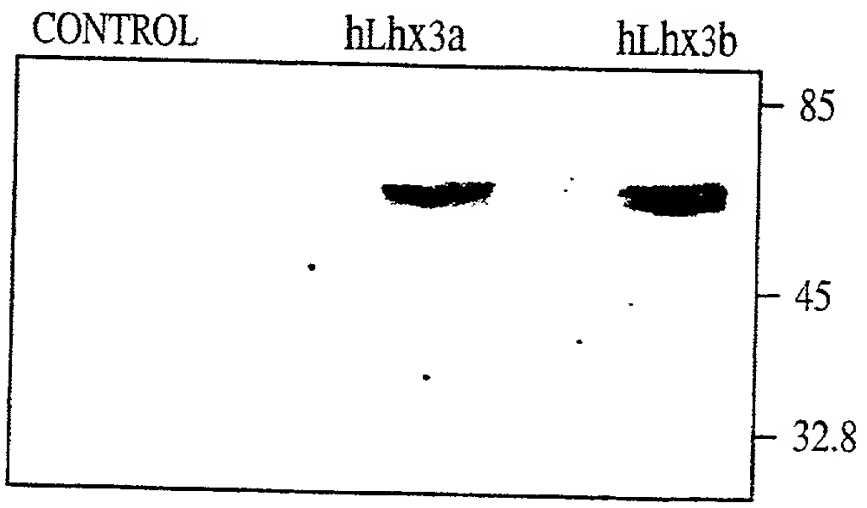


Fig. 15B

FIG. 16Ai

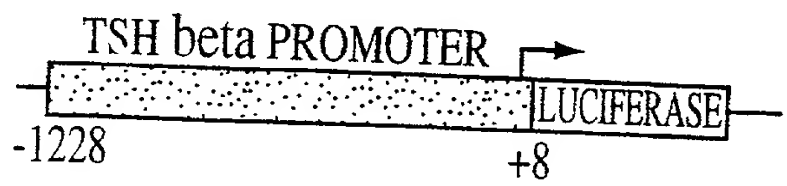
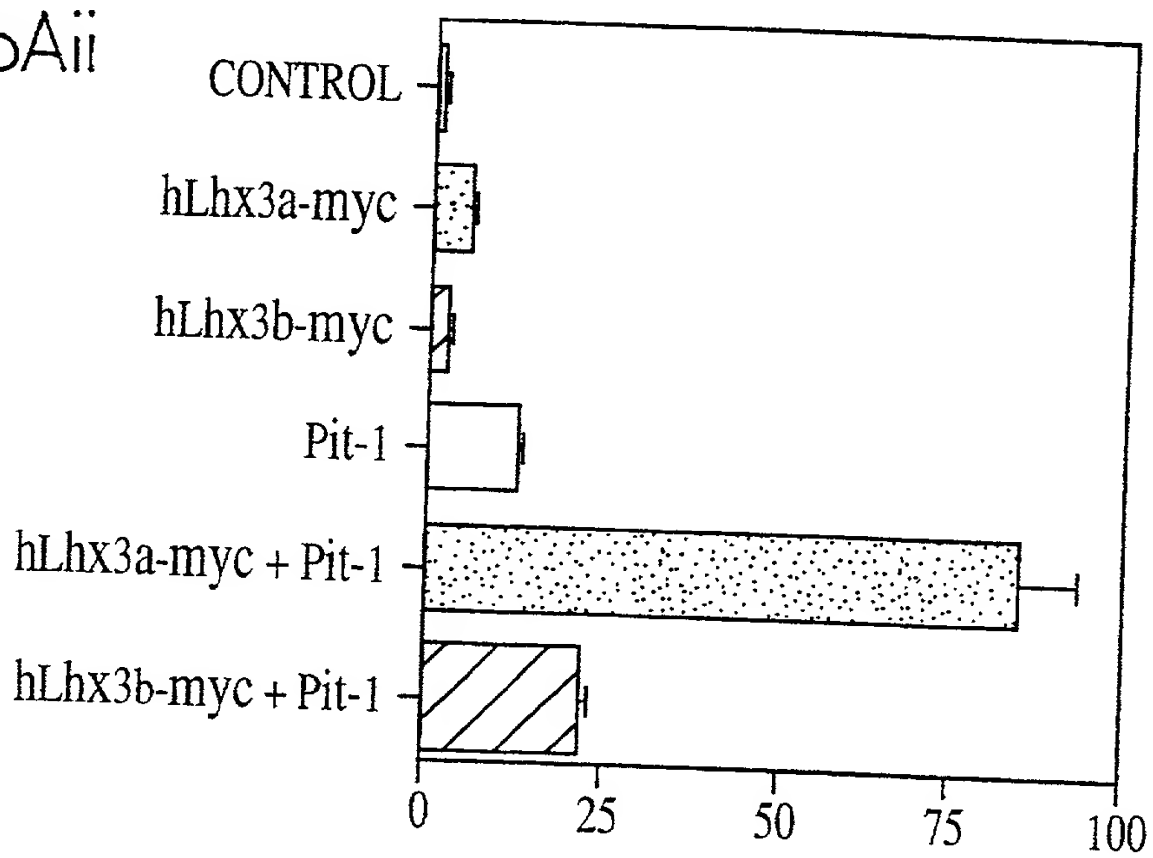


FIG. 16Aii



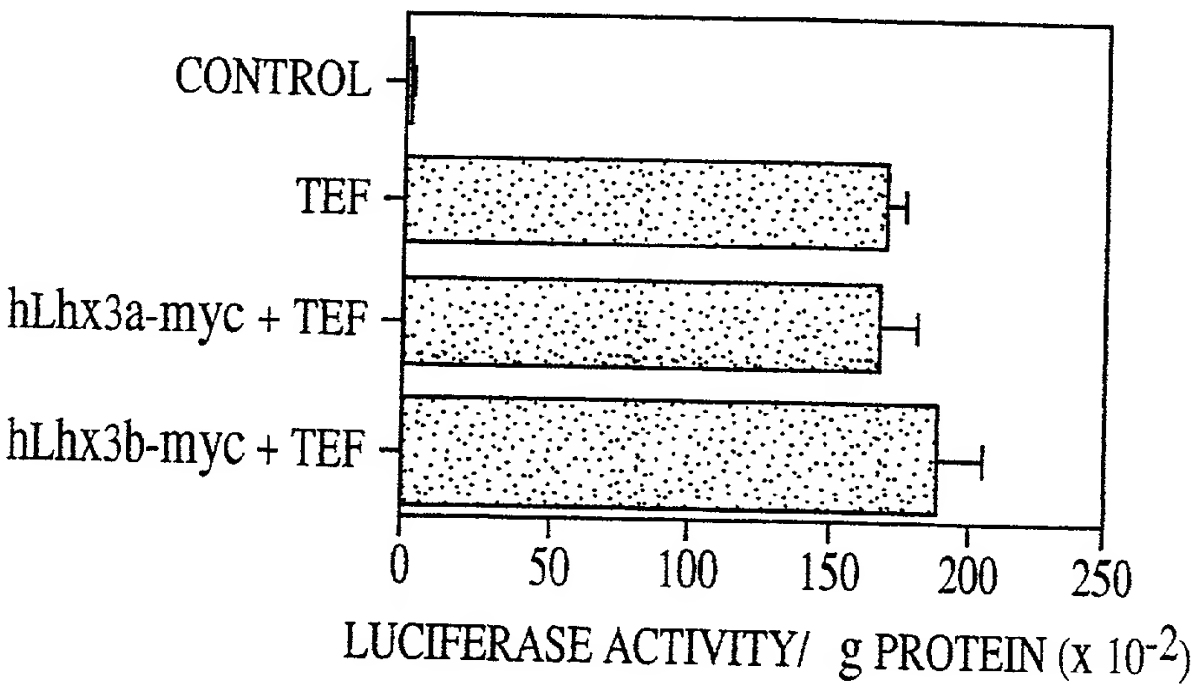
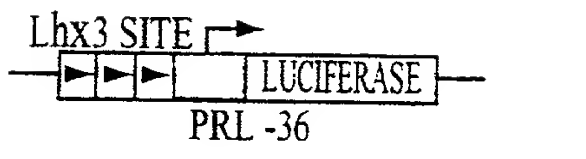


FIG. 16B

FIG. 17A



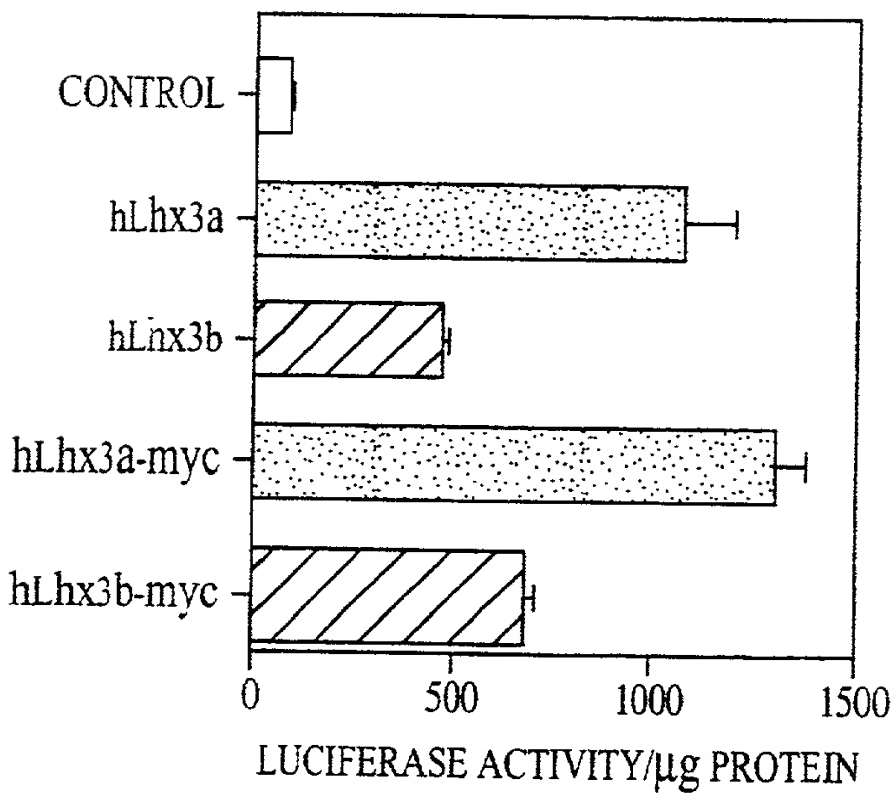


FIG. 17B

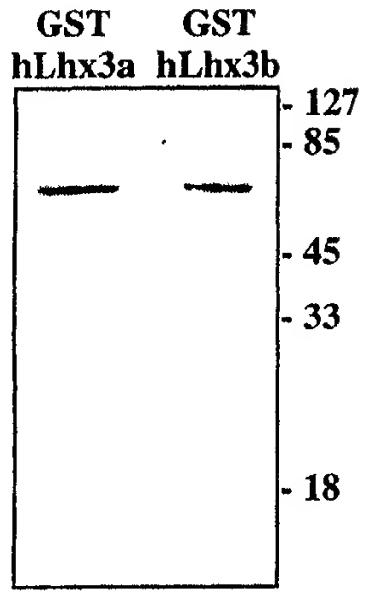


FIG. 18A

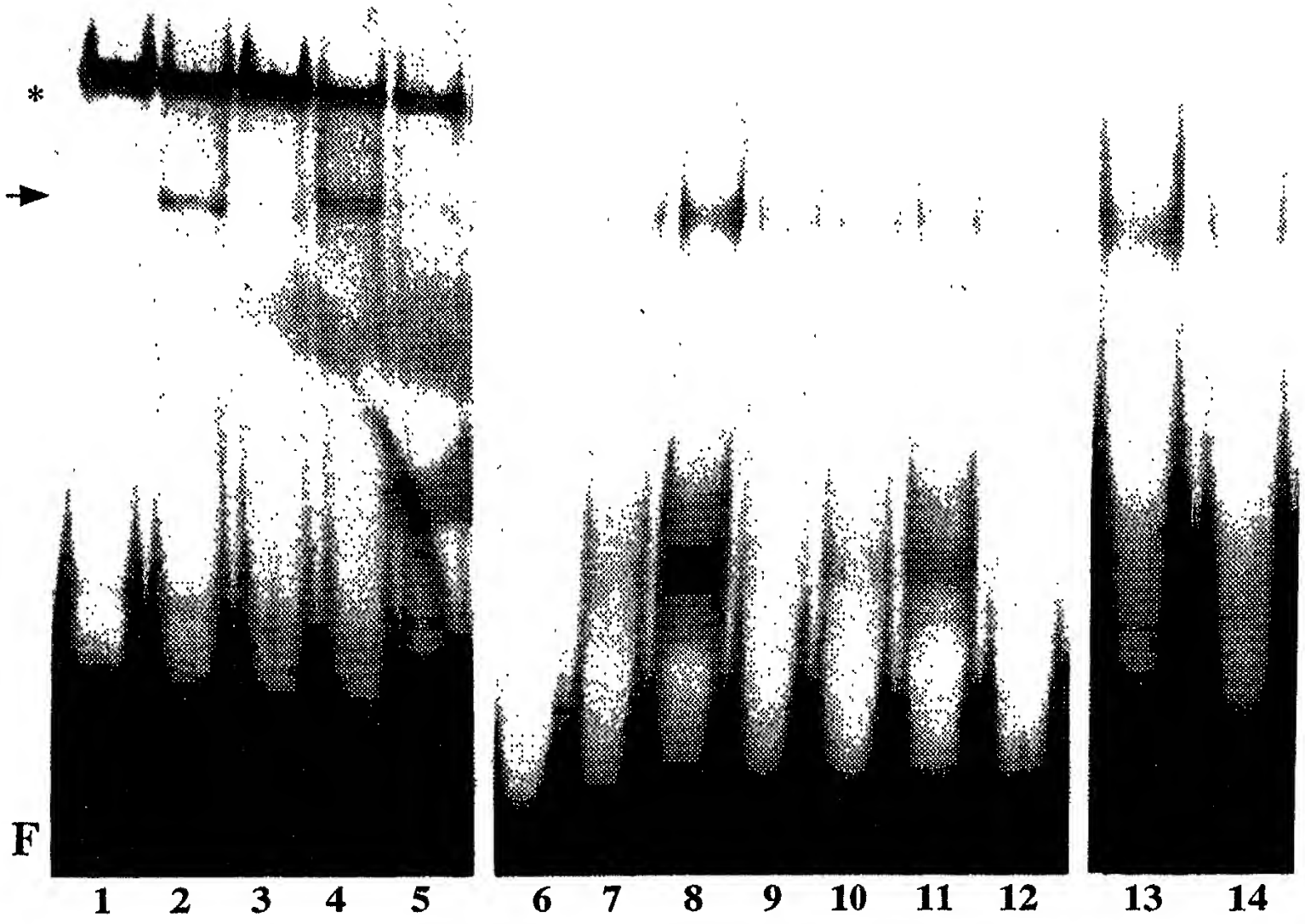


FIG. 18B

FIG. 19A

ttgatattta ccccggaggc ctgcagacag ggccaccagg agggcagcc
acatttgcga ggagtcccta taaagagtgg ccatgacgct taacatgaag
gagacccgat ggggtgcccc agctccaggt gatggtgaag acccgtttcc
ctatgtttcc tgccgggctt cagagagcag atccccctgg ggtggggttt
tcatttgagc tccacatgca cccttcttgg cactggcaac attttgtaat
tgagtattca gcctcgtgaa atggcctggg ctgctttctt gctcacacac
atttttagac cgatgtcagt ttccccttag ctcctgacat aggatgcggt
gcctgcacac tcccggaact tgcggggcca cttaagctgg ctggggaaga
gggtgtgtag ggaaaggagg acccctcggc ggccctgagt cctgtgggcc
ggaggggagg ctggctcgcg ttggggtggg aaggtggctt cactgcctcc
tggtctacga ggtgacccag aacttcctcg tgcccaca GAGATCCC GCTGTGCGCT
GGCTGTGACC AGCACATCCT GGACCGCTTC ATCCTCAAGG CTCTGGACCG
CCACTGGCAC AGCAAGTGTC TCAAGTGCAG CGACTGCCAC ACGCCACTGG
CCGAGCGCTG CTTCAGCCGA GGGGAGAGCG TTTACTGCAA GGACGACTTT
TTCAAGCGCT TCGGGACCAA GTGCGCCGCG TGCCAGCTGG GCATCCCGCC
CACGCAGGTG GTGCGCCGCG CCCAGGACTT CGTGTACCAC CTGCACTGCT
TTGCCTGCGT CGTGTGCAAG CGGCAGCTGG CCACGGGCGA CGAGTTCTAC
CTCATGGAGG ACAGCCGGCT CGTGTGCAAG GCGGACTACG AAACCGCCAA

FIG. 19B

GCAGCGAGAG GCCGAGGCCA CGGCCAAGCG GCCGCGCACG ACCATCACCG
CCAAGCAGCT GGAGACGCTG AAGAGCGCTT ACAACACCTC GCCCAAGCCG
GCGCGCCACG TGCGCGAGCA GCTCTCGTCC GAGACGGGCC TGGACATGCG
CGTGGTGCAG GTTTGGTTCC AGAACCGCCG GGCCAAGGAG AAGAGGCTGA
AGAAGGACGC CGGCCGGCAG CGCTGGGGGC AGTATTTCCG CAACATGAAG
CGCTCCCGCG GCGGCTCCAA GTCGGACAAG GACAGCGTTC AGGAGGGGCA
GGACAGCGAC GCTGAGGTCT CCTTCCCCGA TGAGCCTTCC TTGGCGGAAA
TGGGCCCGGC CAATGGCCTC TACGGGAGCT TGGGGGAACC CACCCAGGCC
TTGGGCCGGC CCTCGGGAGC CCTGGGCAAC TTCTCCCTGG AGCATGGAGG
CCTGGCAGGC CCAGAGCAGT ACCGAGAGCT GCGTCCCGGC AGCCCCTACG
GTGTCCCCCC ATCCCCCGCC GCCCCGCAGA GCCTCCCTGG CCCCCAGCCC
CTCCTCTCCA GCCTGGTGTA CCCAGACACC AGCTTGGGCC TTGTGCCCTC
GGGAGCCCCC GGCGGGCCCC CACCCATGAG GGTGCTGGCA GGGAACGGAC
CCAGTTCTGA CCTATCCACG GGGAGCAGCG GGGGTTACCC CGACTTCCCT
GCCAGCCCCG CCTCCTGGCT GGATGAGGTA GACCACGCTC AGTTCTGAcc
caggcccggc tccaccctgc acctcacacg agggagctgc ccctgggtgg
gcggctcggg gctgctgggg tttccgagga agtggggcca gggcgtcaag
ggagggctgg tgccttcgga gcctcccact gccgaccgca cagctccctc

FIG. 19C

tctgggggct gagggaccca cctggcccct cctctgacac agggctggcc
cgccaggtgg cctcccagca agccagcctt ttttgtaagc aaatttctcc
cctttattga ccaattaact gagcacttgc tgctatttct agacatgaaa
tgtcaccttg ctgaggccca gcccagccca gcatagcccg agggctggaa
aaacgctttc atctctaaaa ctgagaaatc atcataattg tgctttcact
tcccaggctc catgtgtctt ggagccgtca ccccgaggct ccctctttag
gtcggagatt ggccttgcct gtcgaggcaa gaggctgcag aggcggggac
acacctgtgt cctcctcacc ccaccccagg cccttggtgt ccaggctgca
cccacagatg tctgttgcca aacagcctgc cctccctgcc ggagccggct
ctgccagccc cagattggga agtctccccg ctggagaagg gtggggctcc
tctgagcctg ccctgcctcc tccatcagat cctttgggaa gaagtttctg
ggagatgccc gcagctgtgc gtgccccaga cacaaaggct ggcctgtgtg
taagtcaaag tcactcccgc aaacctgaat ctcgagctac ctattggttc
tgtgaatgtt ctgtgtcttt tatttattct cgggtgatca gctctttcca
agctcgtgcc

FIG. 20A

gatcgcttcg gcagcagctg acactcagcc acctgcaccc agcacagccc
gcacacactt ggctttgcac ccgcgtgtcc ttgccctggc ccttcttggg
taacaagtgc tgtgcaaagt gaaggggcag aaagctggct gcatgggcca
ctgctcaaaa cggacacatc ggacctgctg ggagctagga gggagggact
gtggtttctt gtgcccatcc ttctgggcct gggcccttaa agctcacagt
ccagaagcca taggcagagt ggacagagta ttgctgtgag acccacaggg
agagggacct gcaggatggc atcagcccct ggtcccccaa cccttcctgt
gtgtttctgc gcactgccag ggcacccctg cctttgccaa gtcctgtgct
gccgagggcc acccactgct gtgttcttcc ccgggtggct gcccagggct
ggtgctggcc cagggccctc tgggcagggg tgggtgcgtc cctctgcctg
caaggacagg tgggttctgg agagctcacc tgtgtggact ggggcaagag
gctgaaatat caGAGATCCC GCTGTGCGCT
GGCTGTGACC AGCACATCCT GGACCGCTTC ATCCTCAAGG CTCTGGACCG
CCACTGGCAC AGCAAGTGTC TCAAGTGCAG CGACTGCCAC ACGCCACTGG
CCGAGCGCTG CTTCAGCCGA GGGGAGAGCG TTTACTGCAA GGACGACTTT
TTCAAGCGCT TCGGGACCAA GTGCGCCGCG TGCCAGCTGG GCATCCCGCC
CACGCAGGTG GTGCGCCGCG CCCAGGACTT CGTGTACCAC CTGCACTGCT
TTGCCTGCGT CGTGTGCAAG CGGCAGCTGG CCACGGGCGA CGAGTTCTAC

FIG. 20B

CTCATGGAGG ACAGCCGGCT CGTGTGCAAG GCGGACTACG AAACCGCCAA
GCAGCGAGAG GCCGAGGCCA CGGCCAAGCG GCCGCGCACG ACCATCACCG
CCAAGCAGCT GGAGACGCTG AAGAGCGCTT ACAACACCTC GCCCAAGCCG
GCGCGCCACG TGCGCGAGCA GCTCTCGTCC GAGACGGGCC TGGACATGCG
CGTGGTGCAG GTTTGGTTCC AGAACCGCCG GGCCAAGGAG AAGAGGCTGA
AGAAGGACGC CGGCCGGCAG CGCTGGGGGC AGTATTTCCG CAACATGAAG
CGCTCCCGCG GCGGCTCCAA GTCGGACAAG GACAGCGTTC AGGAGGGGCA
GGACAGCGAC GCTGAGGTCT CCTTCCCCGA TGAGCCTTCC TTGGCGGAAA
TGGGCCCGGC CAATGGCCTC TACGGGAGCT TGGGGGAACC CACCCAGGCC
TTGGGCCGGC CCTCGGGAGC CCTGGGCAAC TTCTCCCTGG AGCATGGAGG
CCTGGCAGGC CCAGAGCAGT ACCGAGAGCT GCGTCCCGGC AGCCCCTACG
GTGTCCCCCC ATCCCCCGCC GCCCCGCAGA GCCTCCCTGG CCCCCAGCCC
CTCCTCTCCA GCCTGGTGTA CCCAGACACC AGCTTGGGCC TTGTGCCCTC
GGGAGCCCCC GGCGGGCCCC CACCCATGAG GGTGCTGGCA GGGAACGGAC
CCAGTTCTGA CCTATCCACG GGGAGCAGCG GGGGTTACCC CGACTTCCCT
GCCAGCCCCG CCTCCTGGCT GGATGAGGTA GACCACGCTC AGTTCTGAcc
caggcccggc tccaccctgc acctcacacg agggagctgc ccctgggtgg
gcggctcggg gctgctgggg tttccgagga agtggggcca gggcgtcaag

FIG. 20C

ggagggctgg tgccttcgga gcctcccact gccgaccgca cagctccctc
tctgggggct gagggaccca cctggccccc cctctgacac agggctggcc
cgccaggtgg cctcccagca agccagcctt ttttgtaagc aaatttctcc
cctttattga ccaattaact gagcacttgc tgctatttct agacatgaaa
tgtcaccttg ctgaggccca gcccagccca gcatagcccg agggctggaa
aaacgctttc atctctaaaa ctgagaaatc atcataattg tgctttcact
tcccaggctc catgtgtctt ggagccgtca ccccgaggct ccctctttag
gtcggagatt ggccttgcct gtcgaggcaa gaggctgcag aggcggggac
acacctgtgt cctcctcacc ccaccccagg cccttggtgt ccaggctgca
cccacagatg tctgttgcca aacagcctgc cctccctgcc ggagccggct
ctgccagccc cagattggga agtctccccg ctggagaagg gtggggctcc
tctgagcctg ccctgcctcc tccatcagat cctttgggaa gaagtttctg
ggagatgccc gcagctgtgc gtgccccaga cacaaaggct ggcctgtgtg
taagtcaaag tcactcccgc aaacctgaat ctcgagctac ctattggttc
tgtgaatgtt ctgtgtcttt tatttattct cgggtgatca gctctttcca
agctcgtgcc

FIG. 21A

gccccagtga gccctgggct ggaggtgatc acgcatgggg ctgccccggg
gcacggcctg ggcactgcct tccagaggct gcatgccaga agGAGATCCC GCTGTGCGCT
GGCTGTGACC AGCACATCCT GGACCGCTTC ATCCTCAAGG CTCTGGACCG
CCACTGGCAC AGCAAGTGTC TCAAGTGCAG CGACTGCCAC ACGCCACTGG
CCGAGCGCTG CTTCAGCCGA GGGGAGAGCG TTTACTGCAA GGACGACTTT
TTCAAGCGCT TCGGGACCAA GTGCGCCGCG TGCCAGCTGG GCATCCCGCC
CACGCAGGTG GTGCGCCGCG CCCAGGACTT CGTGTACCAC CTGCACTGCT
TTGCCTGCGT CGTGTGCAAG CGGCAGCTGG CCACGGGCGA CGAGTTCTAC
CTCATGGAGG ACAGCCGGCT CGTGTGCAAG GCGGACTACG AAACCGCCAA
GCAGCGAGAG GCCGAGGCCA CGGCCAAGCG GCCGCGCACG ACCATCACCG
CCAAGCAGCT GGAGACGCTG AAGAGCGCTT ACAACACCTC GCCCAAGCCG
GCGCGCCACG TGCGCGAGCA GCTCTCGTCC GAGACGGGCC TGGACATGCG
CGTGGTGCAG GTTTGGTTCC AGAACCGCCG GGCCAAGGAG AAGAGGCTGA
AGAAGGACGC CGGCCGGCAG CGCTGGGGGC AGTATTTCCG CAACATGAAG
CGCTCCCGCG GCGGCTCCAA GTCGGACAAG GACAGCGTTC AGGAGGGGCA
GGACAGCGAC GCTGAGGTCT CCTTCCCCGA TGAGCCTTCC TTGGCGGAAA
TGGGCCCGGC CAATGGCCTC TACGGGAGCT TGGGGGAACC CACCCAGGCC
TTGGGCCGGC CCTCGGGAGC CCTGGGCAAC TTCTCCCTGG AGCATGGAGG

FIG. 21B

CCTGGCAGGC CCAGAGCAGT ACCGAGAGCT GCGTCCCGGC AGCCCCTACG
GTGTCCCCCC ATCCCCCGCC GCCCCGCAGA GCCTCCCTGG CCCCCAGCCC
CTCCTCTCCA GCCTGGTGTA CCCAGACACC AGCTTGGGCC TTGTGCCCTC
GGGAGCCCCC GGCGGGCCCC CACCCATGAG GGTGCTGGCA GGGAACGGAC
CCAGTTCTGA CCTATCCACG GGGAGCAGCG GGGGTTACCC CGACTTCCCT
GCCAGCCCCG CCTCCTGGCT GGATGAGGTA GACCACGCTC AGTTCTGAcc
caggcccggc tccaccctgc acctcacacg agggagctgc ccctgggtgg
gcggctcggg gctgctgggg tttccgagga agtggggcca gggcgtcaag
ggagggctgg tgccttcgga gcctcccact gccgaccgca cagctccctc
tctgggggct gagggaccca cctggcccct cctctgacac agggctggcc
cgccaggtgg cctcccagca agccagcctt ttttgtaagc aaatttctcc
cctttattga ccaattaact gagcacttgc tgctatttct agacatgaaa
tgtcaccttg ctgaggccca gcccagccca gcatagcccg agggctggaa
aaacgctttc atctctaaaa ctgagaaatc atcataattg tgctttcact
tcccaggctc catgtgtctt ggagccgtca ccccgaggct ccctctttag
gtcggagatt ggccttgcct gtcgaggcaa gaggctgcag aggcggggac
acacctgtgt cctcctcacc ccaccccagg cccttggtgt ccaggctgca
cccacagatg tctgttgcca aacagcctgc cctccctgcc ggagccggct

FIG. 21C

ctgccagccc cagattggga agtctccccg ctggagaagg gtggggctcc
tctgagcctg ccctgcctcc tccatcagat cctttgggaa gaagtttctg
ggagatgccc gcagctgtgc gtgccccaga cacaaaggct ggcctgtgtg
taagtcaaag tcactcccgc aaacctgaat ctcgagctac ctattggttc
tgtgaatgtt ctgtgtcttt tatttattct cgggtgatca gctctttcca
agctcgtgcc

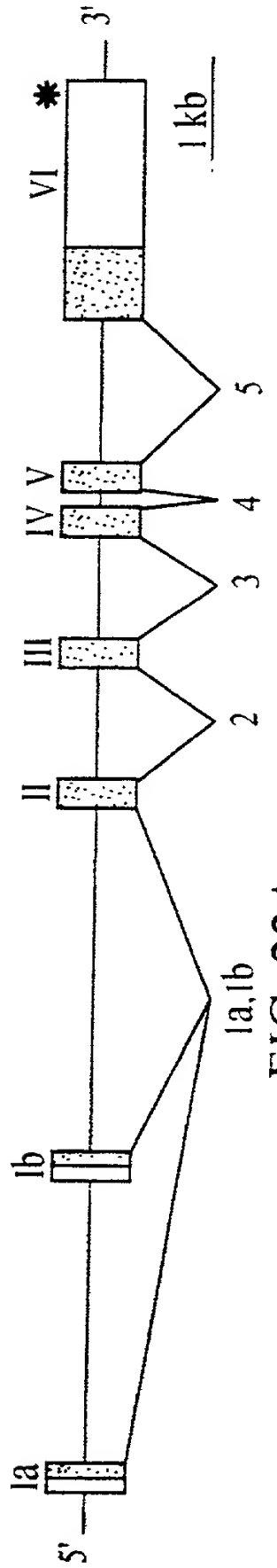


FIG. 22A

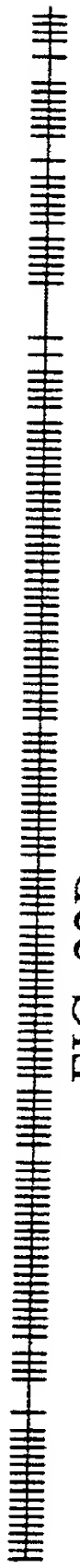


FIG. 22B

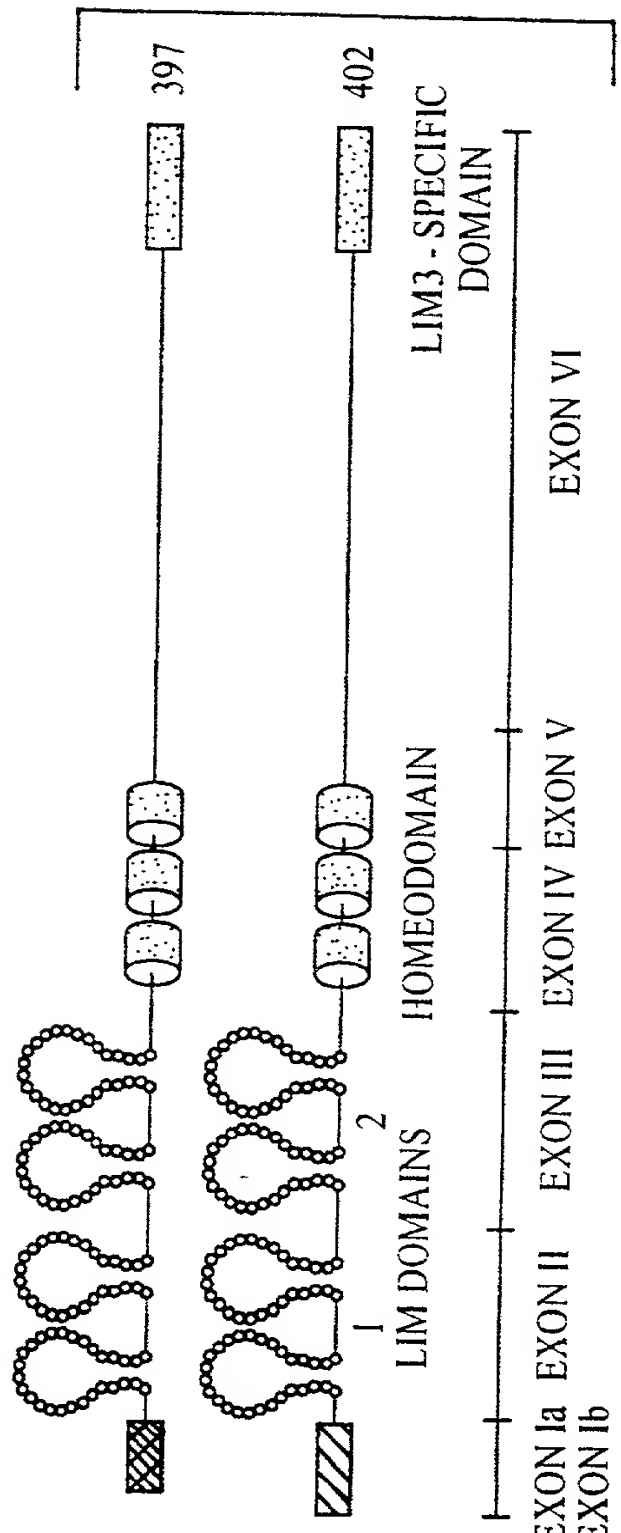


FIG. 22C

FIG. 23A

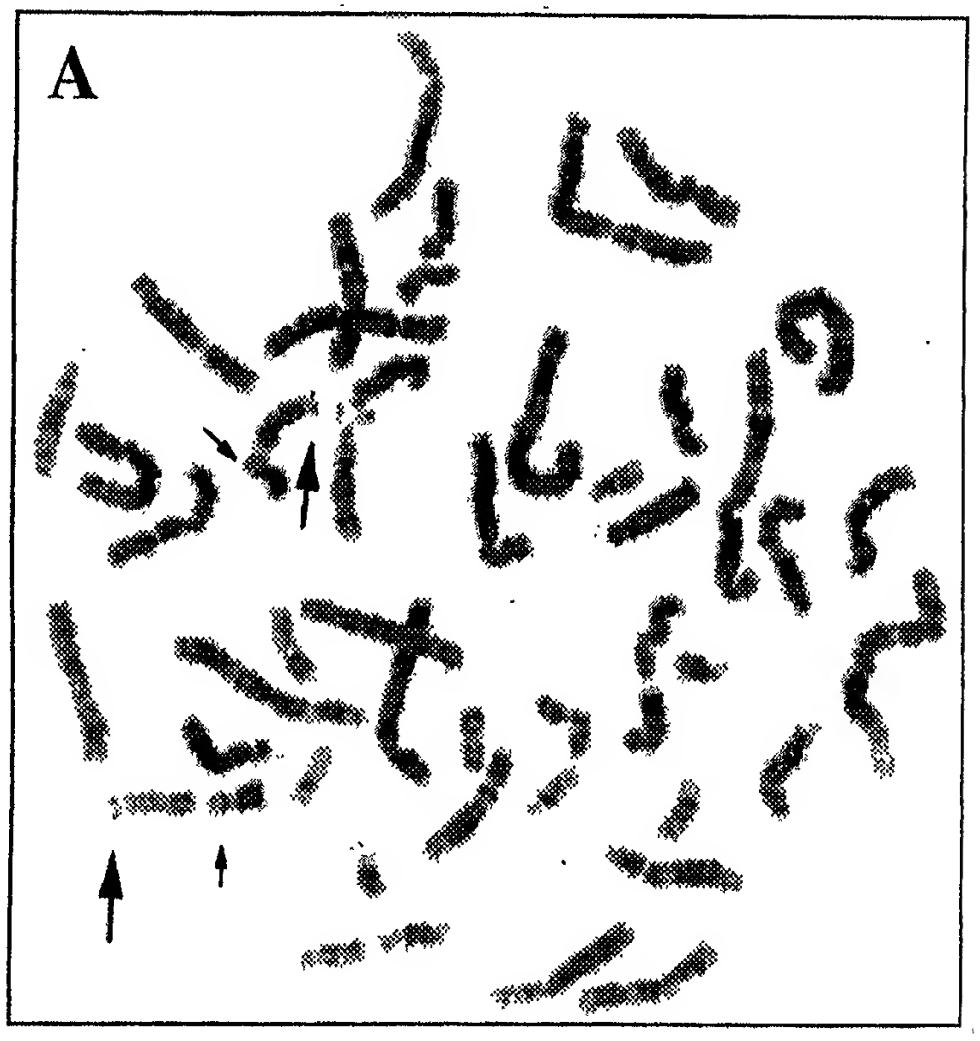


FIG. 23B

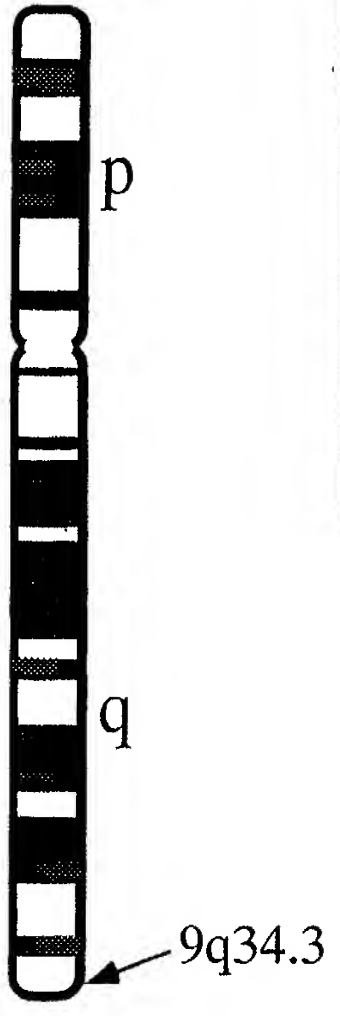


FIG. 23C

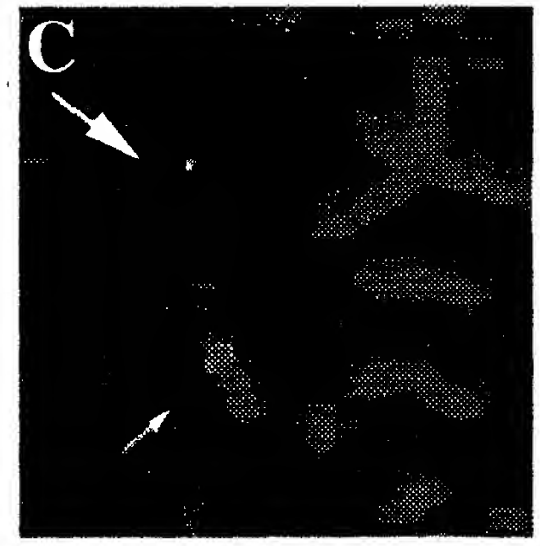


FIG. 24

```
  1 MLLETGLERD RARPGAAAVC TLGGTR
 27 EIPLCAGCDQ HILDRFILKA LDRHWHSKCL KCSDCHTPLA ERCFSRGESV
 77 YCKDDFFKRF GTKCAACQLG IPPTQVVRRA QDFVYHLHCF ACVVCKRQLA
127 TGDEFYLMED SRLVCKADYE TAKQREAEAT AKRPRTTITA KQLETLKSAY
177 NTSPKPARHV REQLSSETGL DMRVVQVWFQ NRRAKEKRLK KDAGRQRWGQ
227 YFRNMKRSRG GSKSDKDSVQ EGQDSDAEVS FPDEPSLAEM GPANGLYGSL
277 GEPTQALGRP SGALGNFSLE HGGLAGPEQY RELRPGSPYG VPPSPAAPQS
327 LPGPQPLLSS LVYPDTSLGL VPSGAPGGPP PMRVLAGNGP SSDLSTGSSG
377 GYPDFPASPA SWLDEVDHAQ F*
```

FIG. 25

```
  1 MEARGELGPA RESAGGDLLL ALLARRADLR R
 32 EIPLCAGCDQ HILDRFILKA LDRHWHSKCL KCSDCHTPLA ERCFSRGESV
 82 YCKDDFFKRF GTKCAACQLG IPPTQVVRRA QDFVYHLHCF ACVVCKRQLA
132 TGDEFYLMED SRLVCKADYE TAKQREAEAT AKRPRTTITA KQLETLKSAY
182 NTSPKPARHV REQLSSETGL DMRVVQVWFQ NRRAKEKRLK KDAGRQRWGQ
232 YFRNMKRSRG GSKSDKDSVQ EGQDSDAEVS FPDEPSLAEM GPANGLYGSL
282 GEPTQALGRP SGALGNFSLE HGGLAGPEQY RELRPGSPYG VPPSPAAPQS
332 LPGPQPLLSS LVYPDTSLGL VPSGAPGGPP PMRVLAGNGP SSDLSTGSSG
382 GYPDFPASPA SWLDEVDHAQ F*
```

FIG. 26A

```
  1 ggcacgagcc ccgcacgacg cggcgggact tgggagcccc gaaccctcca
 51 ggggacgctg acctcggagg agcgcgtctc gcgccactcg gcctggtggc
101 cgcgATGCTG CTGGAAACGG GGCTCGAGCG CGACCGAGCG AGGCCCGGGG
151 CCGCCGCCGT CTGCACCTTG GGCGGGACTC GGGgtaagcc ccagcaggac
201 actgaggaca gaaacggcaa gggcggcaga ggcgcgagga aggggggtgcg
251 tgcagggcca gcggccaggc aaagaaagtc ccgccgctct gcaggcggga
301 cacagagatg gaaactgcag agagtgagtt tccagatccc agggtggcgg
351 ggagggcctg acgctggcct gcaagagtgc gggacagcgg ttggagtgga
401 ggcccctaga aaaaaagggg gcatcgcagg cacagctggg gggcgatggg
451 gccgaccaag gggtgctagg ttcccccggt gaccagtgcc cgtcagctct
501 tgcacacagc ccggcccagg tctctggacc ccacagcagg ggacccaagc
551 cttgtgtctc ccgcctgaac caccctcccc aagggccatt ccatcaccac
601 ggacgctggg aaataatgga ggcattgttg gagggctggc cagatgccag
651 cagggtgggc cgcctcctta acctggcgcc gccccttccc cagtcctgcc
701 acacacgacc cctgatcgct tcggcagcag ctgacactca gccacctgca
751 cccagcacag cccgcacaca ctcggctttg cacccgcgtg tccttgccct
801 ggcccttctt gggtaacaag tgctgtgcaa agtgaagggg cagaaagctg
851 gctgcatggg ccactgctca aaacggacac atcggacctg ctgggagcta
901 ggagggaggg actgtggttt cttgtgccca tccttctggg cctgggccct
```

FIG. 26B

951 taaagctcac agtccagaag ccataggcag agtggacaga gtattgctgt
1001 gagacccaca gggagaggga cctgcaggat ggcatcagcc cctggtcccc
1051 caacccttcc tgtgtgtttc tgcgcactgc cagggcaccc ctgctttgcc
1101 aagtcctgtg ctgccgaggg ccacccactg ctgtgttctt ccccgggtgg
1151 ctgcccaggg ctggtgctgg cccagggccc tctgggcagg ggtgggtgcg
1201 tccctctgcc tgcaaggaca ggtgggttct ggagagctca cctgtgtgga
1251 ctggggcaag aggctgaaat atcaggtaag ggaccgtgtt ccaatggagc
1301 cggagtgctg ggggctggaa atggaaggtg tgccctgggg cttccccagc
1351 tcggcccctc acgacccgag gtcttggctg cgtgtccagg acacagagcc
1401 tgttctctct caaggattgc ccttcctccc tgagccgtcc ggggccgcag
1451 ttccaggggt ggagcccaga agcctgttag catctgggat cggtccggca
1501 ccttgcggtt ccggtacgca gccctcggcg ccacactcac cccttctgcg
1551 tttcgggttg agctcccgcc gaccatctgc tgctcccgag gccaaacctc
1601 agcggcggga ggaccctgct gccttctcga cccctctccc gggaacctta
1651 gccctcctgg cgtgtgctcc agctcaggcc tctgcctctg gcccgctccg
1701 gcgcaggaag ctgcggggcc gggacgaacg ctggcgggaa gccctgacct
1751 gggccctccc ttaccggtgc ccgccctcgg gccgggcacg cggggcggcc
1801 tctgggcacc gcaggtcccg gcgcaaaggc gctcagagtc cgcagtggcc
1851 cgggctggtc tccgcgaccc ccggccccgc cccgccccgc ggccccgccc

FIG. 26C

1901 cccggccgct ccgccctccg ctcggccaga ggctccgggc cccagggcgg
1951 cccgcgggCg cagcgcccag cagcacccgg agtcgcttgg acgccggttc
2001 ggggctattg cggggtggcg tcgctgggcc cgggaaagtt cgggactgga
2051 gagtggcgac gccgggcggc gggacccATG GAGGCGCGCG GGGAGCTGGG
2101 CCCGGCCCGG GAGTCGGCGG GAGGCGACCT GCTGCTAGCA CTGCTGGCGC
2151 GGAGGGCAGA CCTGCGCCGA Ggtgggtgcc cgggccgagc ggctgcaccg
2201 gggagaccag gagatcctca ggcctttccg ggcctggccg cggaggctgg
2251 caggagctag aggatctggg cgggagtggg cgcgaggacc ccggaacgtc
2301 cgcgcctggg cgcctcagcc tgtatttgtt gcagggcccc tggcctgggt
2351 tgtcagggag tgagtgaggt tgtggcactg cgctgctccg gccagggagc
2401 tctcgggggt ccagggtggg cttaggagac ctctgcagcc cggagccagc
2451 tccctgggct ggaggaggcg cagggagcag tggcggggca gtgaccacgg
2501 gacaggaggg tccccaagaa ggccgcccca gccggactct ttccacgttc
2551 cagcggaaca gagtcagatg caggggccaa ggtcgagctg aactccgacc
2601 gtcggtctcc ccgaagccag gtttcagcgt ctgcgcccac agacacccgc
2651 tcggtttatc cccgctcagg gcccgtctgt aggaaaaagc ctctcttctc
2701 caggcccccc agcttcctgg tggcaccact ctagctccca gcactttggt
2751 tcttagggaa cctgggcagt tctcctcgac tcccgggcca ggtggagccg
2801 caggatgggg aaggaggccc cggagccagt ggggagtgag agggaccggc

FIG. 26D

2851 cggcgggaag ggggttacat ccaggctgtg ggggctcgcg gttccctact
2901 tatttattta tttttcgacg gttcctggga ggggttggcc gcgggggctg
2951 gggggcggag agaggaaggg aggaaggagg actgcgcgcc cgcgctcggg
3001 agagctggcc ggagcgggcg ggctggcgtc caggctccgc cgaccccgcc
3051 atccctgaca caggagcccc cgccagggct ggagtcgcca tgcagcgtaa
3101 ggctggggtc gcgggcgcgg cgcggggtgg gctggggcgg cttttgcccg
3151 acgcgggcgc cggcggcgag ctgcggccga ggcgctgtcc ggtccgcggt
3201 gctgaatccg cgctgtgtcg gcctgtcggg ccgccccgct ccgaccgggt
3251 cctcgcctgc gatcgctgcc cacgatgggg accccgggcg cgcagcgggt
3301 cctcgacgct ccgcacccgg agctgcggtt ttgccggatg cggggcgcat
3351 tcatcgccgg tttcccgcca ctgcgtgggg aggcgcagcc cagtttttc
3401 cgccggaggt cgagggagcc ccttcctggt gtctctcacc cactgggaga
3451 tgggctggag ccggcggggt ccacagccag ggaggcgggt gcaatatgtc
3501 agtaaatccc ggtcccttca gcgggcactc ctctcttcca gagacttttt
3551 ctaagtgaag agggagtcct cagcccttga cacctggaaa acccgctcac
3601 agactcgagg ctcccacagg gcacccttgg acctccccag tgtggttcct
3651 ccaggggggcc tgcagtattg aagtggggtg tgggggggcag aagcagcggg
3701 aagccagacg tttgagtaac tctgncggtg ttgggggcac ccacgcttga
3751 cacaaagcca gtggatgggt ttgtccagtc cactcataag taattttgcg

FIG. 26E

3801 gctgcccaat gatggggaag gcattgatat ttaccccgga ggcctgcaga
3851 cagggccacc aggcagggca gccacatttg cgaggagtcc ctagaaagag
3901 tggccatgac gcttaacatg aaggagaccc gatggggtgc cccagctcca
3951 ggtgatggtg aagacccgtt tccctatgtt tcctgccggg cttcagagag
4001 cagatccccc tggggtgggg ttttcatttg agctccacat gcacccttct
4051 tggcactggc aacattttgt aattgagtat tcagcctcgt gaaatggcct
4101 gggctgcttt cttgctcaca cacattttta gaccgatgtc agtttccccc
4151 tagctcctga cataggatgc ggtgcctgca cactcccgga acttgcgggg
4201 ccacttaagc tggctgggga agagggtgtg tagggaaagg aggacccctc
4251 ggcagccctg agtcctgtgg gccggagggg aggctggctc gcgttggggt
4301 gggaaggtgg cttcactgcc tcctggtcta cgaggtgacc cagaacttcc
4351 tcgtgcccac agAGATCCCG CTGTGCGCTG GCTGTGACCA GCACATCCTG
4401 GACCGCTTCA TCCTCAAGGC TCTGGACCGC CACTGGCACA GCAAGTGTCT
4451 CAAGTGCAGC GACTGCCACA CGCCACTGGC CGAGCGCTGC TTCAGCCGAG
4501 GGGAGAGCGT TTACTGCAAG GACGACTTTT TCAAgtgagc cccgaaacct
4551 cacctcagtg tgggagcgga gggcacgcct gccccaggga ctcctccccc
4601 cacaatcacc aaggccaggc cctcgaagcc tgcgtctctc gcaatcccag
4651 cccactcctg tcacccaggc agggcaccct gcggcctggc caaattaagg
4701 gtggggcctc tccatgggtg ctccctgggt ggctgggcct ggctgggaca

FIG. 26F

4751 tcagcaagta ttatttcgaa aaaaaagcaa tttattacct aaatcacaga
4801 agcagtcatt agagaagata cacccctatt tgtaggattc tactggactt
4851 agttcctccg aaattggtga tgttttagtt cctaatgctg gcacccagcg
4901 gctctggccc agtggccttc atggctccag ctgtggggtg tgagggactg
4951 gccccagatg ggtcctctcc ctccggattc accttcccag atccagcatg
5001 ggtcctgcag gcaatggcgg ctgggctccc cgaggtcttt ctgagattga
5051 ggttcccttc tcagtgggag tgggcagctc tgccccggcg gccaggctgg
5101 cgaccaccct gcagggccgg acagagcctt cctccggggc cgccttccca
5151 ggcagccgct tgccgctctc caacccgctc ggggcgaaat gagcctcgcg
5201 cttccgcgct gagcccggcc ctgtgcgtcc cgcagGCGCT TCGGGACCAA
5251 GTGCGCCGCG TGCCAGCTGG GCATCCCGCC CACGCAGGTG GTGCGCCGCG
5301 CCCAGGACTT CGTGTACCAC CTGCACTGCT TTGCCTGCGT CGTGTGCAAG
5351 CGGCAGCTGG CCACGGGCGA CGAGTTCTAC CTCATGGAGG ACAGCCGGCT
5401 CGTGTGCAAG GCGGACTACG AAACCGCCAA GCAGCGAGgt cagccgaggg
5451 gacgacgctc ccacctttcc tggtctgaaa aaaatggggc tgaggccacg
5501 ctcaggggggg cgtccgggga aattctctcc ccaagcgctc actaaggggg
5551 cctgggctag ggcggtgtag gcagcaggaa gccgaggccg ggaacggcgg
5601 agtcacggac agacccgcgt cccgaaccgc ttcgttcggt ccgaagtgtg
5651 cggcttttcg cccctggtcg gaattatcgc cctaaattct tggccgcgaa

FIG. 26G

5701 ggctgggcca tacccacacc cttagaataa aggggagccc gcggggaaat
5751 cagggtgctt ggagaaggga gccaaggctg aaggcggggg cgccgtggag
5801 gtgcgatttt agggaaggcg ccgcccccgc ccccgcggca gaacccgccc
5851 tccgccggcg ccccctccac cccagcccgg gtgctgcccg tttttgccaa
5901 tcgctcccag cgcccgcgcc ttccgagaag cctgtggggc gggatggggg
5951 tgggcacctg aggccccgac gtccccgcgc cggccggggt gggagggtgg
6001 gggtccggcc ggggccggag gggctgccgc gcctcaccgc tcgcccgccg
6051 cgcagAGGCC GAGGCCACGG CCAAGCGGCC GCGCACGACC ATCACCGCCA
6101 AGCAGCTGGA GACGCTGAAG AGCGCTTACA ACACCTCGCC CAAGCCGGCG
6151 CGCCACGTGC GCGAGCAGCT CTCGTCCGAG ACGGGCCTGG ACATGCGTGT
6201 GGTGCAGgtc agcgctcgcc cctgcttccc tcccgcccgc ggccttgggg
6251 gcccccgcag agccgggcgg ccgctcaccc cgccccgccc ccagGTTTGG
6301 TTCCAGAACC GCCGGGCCAA GGAGAAGAGG CTGAAGAAGG ACGCCGGCCG
6351 GCAGCGCTGG GGGCAGTATT TCCGCAACAT GAAGCGCTCC CGCGGCGGCT
6401 CCAAGTCGGA CAAGGACAGC GTTCAGGAGG GGCAGGACAG CGACGCTGAG
6451 GTCTCCTTCC CCGgtaggcg gagggatcgc ggagctcggg gggggggacga
6501 gcgcgcgtcg gcggggtcgc aggggtccca gggagcccgc ggatctgaat
6551 ttcccatgga gttagtggac tccttaagtt ctactttcaa aagcatttca
6601 cttacagaac ctgctccccc agcaccctcc ccgccctggg tggccactcc

FIG. 26H

6651 ggaccactgc ttttcccctg gtggggacac aatccctgtg gcccgacctg
6701 tccccaagct gggcgcctac gggctttctc atgggggggt gggcgtgtcc
6751 aggccgtctc tctggctcct agcccttgca gtgattttta ggagaatggg
6801 cagtgcattt cgggaaagac tgagtcgaag tcccagctgc ttggagttgg
6851 gggaggggggc tacctggggt cagggagaga aggttccata cccttctgtg
6901 ggggctggat tatttatttc attctccggg caccggggat gctgcgtccc
6951 catctgttga tgcccatcct cagaatgtgg acaagacact ctcttttggg
7001 ctgcctcgtg acccgggcta ctcactcagc cactctggaa ctaaatatcc
7051 ttgtctgcaa aatgtgggtg gtggtatctg tgcccccttc ctaggctgct
7101 gtggggctgg tcctgaaagc ctgggccctg gctgggctgt tcctgactct
7151 gatcccacca ggcctgagac acctgggctg actcaggggt gagggcagtg
7201 gaggggcagg gacagccatg ctccaacagt agaaggggcc tgtgctgacc
7251 tgtcatgtgg tgtggggcag ccactctttc tctgacccag gggtgcctcc
7301 gcctgcagga tgggactctg aggggccgca ggtggagggc aggcgctgac
7351 tgagcctctg cttctgttgc agATGAGCCT TCCTTGGCGG AAATGGGCCC
7401 GGCCAATGGC CTCTACGGGA GCTTGGGGGA ACCCACCCAG GCCTTGGGCC
7451 GGCCCTCGGG AGCCCTGGGC AACTTCTCCC TGGAGCATGG AGGCCTGGCA
7501 GGCCCAGAGC AGTACCGAGA GCTGCGTCCC GGCAGCCCCT ACGGTGTCCC

FIG. 26I

7551 CCCATCCCCC GCCGCCCCGC AGAGCCTCCC TGGCCCCCAG CCCCTCCTCT
7601 CCAGCCTGGT GTACCCAGAC ACCAGCTTGG GCCTTGTGCC CTCGGGAGCC
7651 CCCGGCGGGC CCCCACCCAT GAGGGTGCTG GCAGGGAACG GACCCAGTTC
7701 TGACCTATCC ACGGGGAGCA GCGGGGGTTA CCCCGACTTC CCTGCCAGCC
7751 CCGCCTCCTG GCTGGATGAG GTAGACCACG CTCAGTTCTG Acccaggccc
7801 ggctccaccc tgcacctcac acgagggagc tgcccctggg tgggcggctc
7851 ggggctgctg gggtttccga ggaagtgggg ccagggcgtc aagggagggc
7901 tggtgccttc ggagcctccc actgccgacc gcacagctcc ctctctgggg
7951 gctgagggac ccacctggcc cctcctctga cacagggctg gcccgccagg
8001 tggcctccca gcaagccagc cttttttgta agcaaatttc tccccctttat
8051 tgaccaatta actgagcact tgctgctatt tctagacatg aaatgtcacc
8101 ttgctgaggc ccagcccagc ccagcatagc ccgagggctg gaaaaacgct
8151 ttcatctcta aaactgagaa atcatcataa ttgtgctttc acttcccagg
8201 ctccatgtgt cttggagccg tcaccccgag gctccctctt taggtcggag
8251 attggccttg cctgtcgagg caagaggctg cagaggcggg gacacacctg
8301 tgtcttccgg gagaggcccc ctcctctccc cagaccacag ggggcctctc
8351 tgcctccagc cccaccttcc ccgggagaag ctttccccaa tccccaggtc
8401 tctagatcat tctgttctcg agtatcctgt ggaggaggca aaaatgcctg

FIG. 26J

8451 gcgccccttc tctccaagct caattctcta agcccctcag ggtctcctcc
8501 tcaccccacc ccaggccctt ggtgtccagg ctgcacccac agatgtctgt
8551 tgccaaacag cctgccctcc ctgccggagc cggctctgcc agccccagat
8601 tgggaagtct ccccgctgga gaagggtggg gctcctctga gcctgccctg
8651 cctcctccat cagatccttt gggaagaagt ttctgggaga tgcccgcagc
8701 tgtgcgtgcc ccagacacaa aggctggcct gtgtgtaagt caaagtcact
8751 cccgcaaacc tgaatctcga gctacctatt ggttctgtga atgttctgtg
8801 tcttttattt attctcgggt gatcagctct ttccaagact tcaaaaaant
8851 gtcagttacc tcgtgcc

FIG. 27A

1 atgctgctgg aaacggagct ggcgggcgac cgagatcggc ccggggcccc
51 cgcagccgcc gctgtctgca ccttacccgg gactcgggag atcccactgt
101 gtgccggctg cgaccagcac atcctggacc gcttcatcct caaggctctg
151 gaccgccact ggcacagcaa gtgcctcaag tgcagtgact gccacacgcc
201 gctggccgag cgctgcttca gccgcggaga gagcctctac tgcaaggacg
251 acttcttcaa gcgcttcggg accaagtgcg ccgcgtgcca gctgggcatc
301 ccgcccacgc aggtggtgcg ccgcgcccag gacttcgtgt accacctgca

FIG. 27B

```
 351 ctgcttcgcc tgcgtcgtgt gcaagcggca gctggccacg ggcgacgagt
 401 tctacctcat ggaggacagc cggctcgtgt gcaaggccga ctacgagacc
 451 gccaagcagc gagaggccga ggccacggcc aagcggccgc gcacgaccat
 501 cacggccaag cagctggaga cgctgaagag cgcctacaac acgtcgccca
 551 agcccgcgcg ccacgtgcgc gagcagctct cctccgagac cggcctggac
 601 atgcgcgtcg tgcaggtgtg gttccagaac cgccgggcca aggaaaagcg
 651 gctcaagaag gacgccggcc ggcagcgctg gggccagtac tttcgtaaca
 701 tgaagcgcgc ccgcggtggc tccaagtcgg acaaggacag cgtccaggag
 751 gaggggcagg acagtgacgc cgaggtctcc ttcacagacg agccatccat
 801 ggccgaaatg ggccctgcca acggcctcta cggcggcctg ggggagcctg
 851 cccctgcctt gggccggccc tcgggggccc cgggcagctt cccgctggag
 901 cacggaggcc tggcgggccc ggagcagtat ggagagctgc gccccagcag
 951 cccctacggt gtcccctcgt cgcccgccgc cctgcagagc ctccctggcc
1001 cccagccccc cctctccagc ttggtgtacc cggaggctgg cttggggctt
1051 gtgcccgcgg ggcccccagg tgggccccca cccatgaggg tgctggcagg
1101 gaacggaccc agctccgacc tatccacggg gagcagtggg ggctaccccg
1151 acttccctgc cagtcccgcc tcctggctgg acgaggtgga tcacgctcag
1201 ttctgactga ggccccagct ccgtggagca ccagacacga gcactgcccc
```

FIG. 27C

```
1251 tggctgggtg gtcgggagcc gcgctctcct ttcccgaagc cctgggcctc
1301 taaaggacac agggtcaccg gcggggcaca ggctgaggac tgtccagccc
1351 ggcggccctg gccccgggca gagggacttt ctcccggtct cgaggctcct
1401 tctgggacaa ggggagccac ctggtggctg ctcagcaagc cttgttttgt
1451 aagcagattc ctccctttat caaccaaaat taactgagtg cttgctgctc
1501 tttctagacc ggagtggtca gcccccgaag ccggggaggg gggctctccc
1551 cagcccagag cagcacagcc ctcagactgg aagatgcttt aatttttaaa
1601 attaaaaaat aatacgaact gtgcttccat ttcccagctt cctctgtcta
1651 gttctgcc
```

FIG. 28

```
  1 MLLETELAGD RDRPGAPAAA AVCTLPGTRE IPLCAGCDQH ILDRFILKAL
 51 DRHWHSKCLK CSDCHTPLAE RCFSRGESLY CKDDFFKRFG TKCAACQLGI
101 PPTQVVRRAQ DFVYHLHCFA CVVCKRQLAT GDEFYLMEDS RLVCKADYET
151 AKQREAEATA KRPRTTITAK QLETLKSAYN TSPKPARHVR EQLSSETGLD
201 MRVVQVWFQN RRAKEKRLKK DAGRQRWGQY FRNMKRARGG SKSDKDSVQE
251 EGQDSDAEVS FTDEPSMAEM GPANGLYGGL GEPAPALGRP SGAPGSFPLE
301 HGGLAGPEQY GELRPSSPYG VPSSPAALQS LPGPQPLLSS LVYPEAGLGL
351 VPAGPPGGPP PMRVLAGNGP SSDLSTGSSG GYPDFPASPA SWLDEVDHAQ
401 F
```

FIG. 29A

```
   1 atggaagcgc gcggggagct gggccccagc cgggagtcgg cgggcggcga
  51 cctgctgctg gcgctgctgg cgcggaggga ggacctgcgc cgagagatcc
 101 cactgtgtgc cggctgcgac cagcacatcc tggaccgctt catcctcaag
 151 gctctggacc gccactggca cagcaagtgc ctcaagtgca gtgactgcca
 201 cacgccgctg gccgagcgct gcttcagccg cggagagagc ctctactgca
 251 aggacgactt cttcaagcgc ttcgggacca agtgcgccgc gtgccagctg
 301 ggcatcccgc ccacgcaggt ggtgcgccgc gcccaggact tcgtgtacca
 351 cctgcactgc ttcgcctgcg tcgtgtgcaa gcggcagctg gccacgggcg
 401 acgagttcta cctcatggag gacagccggc tcgtgtgcaa ggccgactac
 451 gagaccgcca agcagcgaga ggccgaggcc acggccaagc ggccgcgcac
 501 gaccatcacg gccaagcagc tggagacgct gaagagcgcc tacaacacgt
 551 cgcccaagcc cgcgcgccac gtgcgcgagc agctctcctc cgagaccggc
 601 ctggacatgc gcgtcgtgca ggtgtggttc cagaaccgcc gggccaagga
 651 aaagcggctc aagaaggacg ccggccggca gcgctggggc cagtactttc
 701 gtaacatgaa gcgcgcccgc ggtggctcca agtcggacaa ggacagcgtc
 751 caggaggagg ggcaggacag tgacgccgag gtctccttca cagacgagcc
 801 atccatggcc gaaatgggcc ctgccaacgg cctctacggc ggcctggggg
 851 agcctgcccc tgccttgggc cggccctcgg gggccccggg cagcttcccg
```

FIG. 29B

```
 901 ctggagcacg gaggcctggc gggcccggag cagtatggag agctgcgccc
 951 cagcagcccc tacggtgtcc cctcgtcgcc cgccgccctg cagagcctcc
1001 ctggccccca gcccctcctc tccagcttgg tgtacccgga ggctggcttg
1051 gggcttgtgc ccgcggggcc cccaggtggg cccccaccca tgagggtgct
1101 ggcagggaac ggacccagct ccgacctatc cacggggagc agtgggggct
1151 accccgactt ccctgccagt cccgcctcct ggctggacga ggtggatcac
1201 gctcagttct gactgaggcc ccagctccgt ggagcaccag acacgagcac
1251 tgcccctggc tgggtggtcg ggagccgcgc tctcctttcc cgaagccctg
1301 ggcctctaaa ggacacaggg tcaccggcgg ggcacaggct gaggactgtc
1351 cagcccggcg gccctggccc cgggcagagg gactttctcc cggtctcgag
1401 gctccttctg ggacaagggg agccacctgg tggctgctca gcaagccttg
1451 ttttgtaagc agattcctcc ctttatcaac caaaattaac tgagtgcttg
1501 ctgctctttc tagaccggag tggtcagccc ccgaagccgg ggaggggggc
1551 tctccccagc ccagagcagc acagccctca gactggaaga tgctttaatt
1601 tttaaaatta aaaaataata cgaactgtgc ttccatttcc cagcttcctc
1651 tgtctagttc tgcc
```

FIG. 30

```
  1 MEARGELGPS RESAGGDLLL ALLARREDLR REIPLCAGCD QHILDRFILK
 51 ALDRHWHSKC LKCSDCHTPL AERCFSRGES LYCKDDFFKR FGTKCAACQL
101 GIPPTQVVRR AQDFVYHLHC FACVVCKRQL ATGDEFYLME DSRLVCKADY
151 ETAKQREAEA TAKRPRTTIT AKQLETLKSA YNTSPKPARH VREQLSSETG
201 LDMRVVQVWF QNRRAKEKRL KKDAGRQRWG QYFRNMKRAR GGSKSDKDSV
251 QEEGQDSDAE VSFTDEPSMA EMGPANGLYG GLGEPAPALG RPSGAPGSFP
301 LEHGGLAGPE QYGELRPSSP YGVPSSPAAL QSLPGPQPLL SSLVYPEAGL
351 GLVPAGPPGG PPPMRVLAGN GPSSDLSTGS SGGYPDFPAS PASWLDEVDH
401 AQF
```